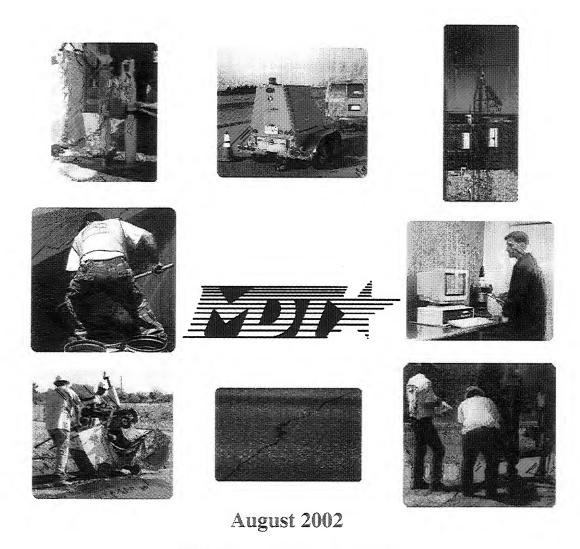




Montana Department of Transportation Contract #HWY-306041-DT Performance Prediction Models

Field Investigation Report



MDT Highways and Engineering Division

"To survey, design, acquire the right-of-way, and construct safe, cost effective highway improvement projects in order to develop and maintain a cost effective, efficient, and safe transportation system."

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FIELD INVESTIGATION REPORT

Introduction

The Montana Department of Transportation (MDOT) contracted Fugro-BRE to develop performance characteristics of flexible pavements in Montana and use these characteristics in the development of deterioration/performance models. A comprehensive performance monitoring and laboratory-testing program is currently underway to accomplish this objective.

Currently, ten additional sites in Montana have been added to the Long Term Pavement Performance (LTPP) sites from Montana and the surrounding States for this study. Field investigation work was required for these sites to develop a better understanding of the pavement layer structure and material properties.

Field Investigations

In April 2002, a team comprised of personnel from Fugro-BRE, Parsons Brinckerhoff (PB) and MDOT staff conducted field investigations on the ten additional Montana sites added to this study. The team consisted of Weng On Tam and Brian Killingsworth from Fugro-BRE; Brian Schlauch from PB; and Greg Zeihen, Dan Mayberry, Sam Mitchell, John Winfield and Ray Nydegger from MDOT.

A summary of the materials sampled can be found in the field reports for each site in Appendices A through J. Table 1 shows the testing schedule and Appendix location for the ten sites.

Table 1 Testing Schedule and Appendix Location of the Ten Additional Sites

Site	Roadway	Date	Appendix
Silver City	S-279	April 15, 2002	A
Beckhill/Deerlodge	I-90	April 16, 2002	В
Perma	S-382	April 17, 2002	С
Condon	P-83	April 18, 2002	D
Hammond	N-23	April 23, 2002	Е
Wolf Point	P-25	April 24, 2002	F
Fort Belknap	P-1	April 25, 2002	G
Roundup	N/P-14	April 30, 2002	Н
Lavina	N/P-14	May 1, 2002	I
Geyser	P-57	May 2, 2002	J

Twenty-foot bores were conducted to determine the layer thickness information as well as to check for the presence of a shallow rigid layer that may affect the backcalculated

pavement moduli. Two ten-inch diameter asphalt concrete cores were taken to determine mix design properties from the asphalt concrete mixture. These include the air void content, gradation, and asphalt binder viscosity. Twelve six-inch asphalt concrete cores were taken to determine material properties for use in performance prediction.

To characterize the underlying layers, cores of the cement-treated bases were taken to determine their properties (compressive strength and elastic modulus), and samples of the unbound layers were taken to determine their resilient modulus and moisture content.

Laboratory Materials Testing

Laboratory materials tests will be performed to measure the properties needed for the distress prediction models. Testing on the samples recovered from the field investigation will be conducted at Fugro and AAT (Advanced Asphalt Technologies). AAT will conduct the mixture performance tests in their laboratory in Sterling, Virginia. Fugro will conduct all the other tests in the laboratories in Austin and Houston, Texas. Table 2 shows the testing schedule for materials from the ten sites.

Annual Monitoring Program

The annual monitoring program will be consistent with the Long Term Pavement Performance (LTPP) program except a higher frequency of data collection will be implemented for this project. The annual monitoring project will include Falling-Weight Deflectometer (FWD) tests, condition surveys to identify and measure the types and extents of distress at the site, ride quality, and rut depths (determined by transverse profiles).

<u>Deflection Testing.</u> The first round of deflection testing was conducted in October 2001 and the second round in April 2002. A summary of the deflections measured for each site during the first round of testing can be found in the appendices. The project team is processing deflections from the second round of testing. With pavement layer thicknesses determined from the field investigation in April 2002, Fugro-BRE will use backcalculation procedures to determine the pavement layer moduli for the test sections.

<u>Profile Testing.</u> The first round of profile testing was conducted in October 2001. The resulting International Roughness Indices (IRI) for each of the sections are summarized in the appendices.

<u>Manual Distress Surveys</u> for each of the sites were conducted using the LTPP Distress Identification Manual. Several of the sites had chip seals and showed relatively little distress.

Table 2 Laboratory Materials Testing Plan for the Ten Additional Sites

Materials Test	10 to 12-inch Cores	4 to 6-inch Cores	Cement Treated Base	Aggregate Base & Subbase	Subgrade Soil
Rice or Maximum	√-2	-			
Specific Gravity					
Bulk Specific Gravity		√ - 12			
Extract Asphalt	√ - 2				
Gradation of HMA	√ ⁽¹⁾				
Viscosity	√ ⁽²⁾				
Repeated Load		√ ⁽³⁾		√ ⁽⁵⁾	√ ⁽⁵⁾
Resilient Modulus					'
Indirect Tensile		√ ⁽³⁾			
Strength & Failure					
Strain					
Creep Compliance		√ ⁽⁴⁾			
Compressive Strength			√ - 4		
Elastic Modulus			√ - 4		
Moisture Contents					√ - 2 Boring

⁽¹⁾ The gradation of the HMA mixtures is only needed for those projects where the construction files do not have this information. If the gradation is available, gradation tests do not need to be performed.

Summary

This report compiles the field investigation work conducted by the project team in April 2002 as well as the raw data collected from the first round of manual distress surveys, deflection testing, and profile testing. The appendices contain the field data collected from each of the ten sites. Each appendix contains the location, pavement structure, summary of materials sampled, bore logs, distress survey maps and summary, FWD deflections, and profile data for one site.

The materials testing plan is being finalized, and preparations for testing the samples are underway. Quality control checks are being conducted on the manual distress surveys, FWD deflections, profile data, and any necessary post-processing is underway. All the results from the materials testing and annual surveys will be used in the local calibration of the 2002 Guide models for Montana.

⁽²⁾ The viscosity is to be performed on the extracted asphalt at three temperatures – 275, 140, and 70.

⁽³⁾ The resilient modulus is to be measured on specific cores and then followed by the indirect tensile strength test. Six cores (3 from the wheel path area and 3 from the between wheel path area) will be tested. Two cores will be tested at 40, two at 60, and two at 80 °F. The LTPP protocols for the resilient modulus and indirect tensile strength testing will be followed.

⁽⁴⁾ The creep compliance testing for low temperature characterization will be conducted on 6 cores. Two cores will be tested at a -20, two at -10, and two at 0 °C, in accordance with the LTPP test protocols. The creep compliance tests will be followed by the indirect tensile strength test at each temperature in accordance with the LTPP protocol.

⁽⁵⁾ Two test specimens will be compacted and tested from each site for the aggregate base materials and subgrade soils. These repeated load resilient modulus tests will be performed in accordance with the LTPP test protocols.

APPENDIX A SILVER CITY

Location:

Silver City

Longitude:

112°11' W

Lattitude:

46°45' N

Pavement Structure

Date:

March 2002

			Thickness, ir	า	1
Layer#	Material Type	Before	After	Average	Commets
1	ACP	5.1	4.7	4.9	Chip Seal
2	Base	7.0	7.0	7.0	Dark Brown Sandy Clay
3	Subgrade	-	-	-	Gravelly Clay

Materials Sampling

Date:

4/15/02

Material Type	Quantity	Comments
ACP	14 cores	2-10" & 12-6" cores
Base	2 bags	2 additional bags
Subgrade	7 bags	1 split spoon

SHRP REGIO	N	FIELD MATERIAL SAMPLING	STATE CODE
STATE MT		AND FIELD TESTING	SHRP ASSIGNED ID
CAMPI EXPER	IMENT Silver Con Ex	ROUTE/HIGHWAY <- 274 Inn	Direction WE
6" Asphol	r (a) perore secti	on (b) Wifel Section_	FIELD SET NO
OPERATOR A	One /Sa. For	LOG OF SHOULDER PROBE	DCG SHEET: 08
AUGERING DA	TE 4 - 15 - 02 L	UIPMENT USED S.	AUGER BROKE / OF /
OP OF ROCK	BASED ON:	OFFSET: fee	AUGER PROBE NUMBER
NOTE: SHOUL	DER AUGER PROBE IS	OCATION STATION: RA- 9 OFFSET: fee AN OPTIONAL ITEM, AS DIRECTED	BY SAR.
Scale	Depth from	Material Description	
(feet)	Surface (Feet)	naterial bescription	Material Code
l		- 7" brn base course	
2			
		dk bon ely some fine gra	vel :
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TUSAL WITHI RTIFIED G. Zeiher	- 10-	VERIFIED AND APPROVED	MONTH-DAY-YEAR19

5 6 7 8 9 10	TE/HIGHWAY 5-279 Lane (b) After Section V LOG OF SHOULDER PROBE MENT USED SHE TION STATION: OFFSET: feet OPTIONAL ITEM, AS DIRECTED B Material Description Bose Course LT ben Sandy grown Subjected dk bros: Somethy cly	DCG SHEET: 08 ET NUMBER / OF / NUGER PROBE NUMBER from °/s SY SAR. Material Code
SAMPLE/TEST: (a) Before Section A. C. Asphalt OPERATOR Dan M. EQUIP AUGERING DATE 4 - 15 - 02 LOCA TOP OF ROCK BASED ON: NOTE: SHOULDER AUGER PROBE IS AN Scale Depth from (feet) Surface (Feet) 1 - 7 2 - 2 - 3 4 - 5 6 - 7 - 8 8 - 9 - 10 - 00.0	TE/HIGHWAY S-279 Lane (b) After Section V LOG OF SHOULDER PROBE MENT USED SHE TION STATION: OFFSET: feet OPTIONAL ITEM, AS DIRECTED B Material Description Bose Course LT brn Sandy game Subgrade dk brs: Somely cly In tan brn grovelly cly	Direction W 8 FIELD SET NO. DCG SHEET: 08 ET NUMBER / OF / NUGER PROBE NUMBER from °/s EY SAR. Material Code
SAMPLE/TEST: (a) Before Section A. C. Asphalt OPERATOR Don M. EQUIP AUGERING DATE 4 - 15 - 02 LOCA TOP OF ROCK BASED ON: NOTE: SHOULDER AUGER PROBE IS AN Scale Depth from (feet) Surface (Feet) 1 2 3 4 5 6 7 8 9 10 10 10.0	(b) After Section V IOG OF SHOULDER PROBE MENT USED SHE TION STATION: OFFSET: Feet OPTIONAL ITEM, AS DIRECTED B Material Description Bose Course Ly ben Sandy gene Suignide dk bro: Sandy Cly In tan ben grovelly cly	DCG SHEET: 08 ET NUMBER / OF / NUGER PROBE NUMBER from °/s SY SAR. Material Code
OPERATOR Dan M. EQUIP AUGERING DATE 4 - 15 - 02 LOCA TOP OF ROCK BASED ON: NOTE: SHOULDER AUGER PROBE IS AN Scale Depth from (feet) Surface (Feet) 1	MENT USED SHE TION STATION: OFFSET: feet OPTIONAL ITEM, AS DIRECTED B Material Description Bose Course LT brn Sandy gund Subgrade dk bro: Somely Cly In tan brn grovelly Cly	DCG SHEET: 08 ET NUMBER / OF / NUGER PROBE NUMBER from °/s EY SAR. Material Code
AUGERING DATE 4 - 15 - 02 LOCA TOP OF ROCK BASED ON: NOTE: SHOULDER AUGER PROBE IS AN Scale Depth from Surface (Feet) 1	TION STATION: OFFSET: Feet OPTIONAL ITEM, AS DIRECTED B Material Description Bose Course Ly brn Sandy june Subgrade dk bro: Sandy Cly In tan brn gravelly cly	SUGER PROBE NUMBER from °/s Y SAR. Material Code
NOTE: SHOULDER AUGER PROBE IS AN Scale Depth from Surface (Feet) 1 2 3 4 5 6 7 8 9 10 10 10.0	OPTIONAL ITEM, AS DIRECTED B Material Description Bose Course LT ben Sandy gene Subgride dk bro: Somely cly In tan ben grovelly cly	from °/s EY SAR. Material Code
Scale Depth from Surface (Feet) 1 2 3 4 5 6 7 8 9 10	Material Description Bose Course LT ben sandy grown of bros. Somethy Cly In tan ben grovelly cly	Material Code
(feet) Surface (Feet) 1 .7 2 .7 3 .2.5 4 .5 6 .5.5 8 .9 10 .0.0	Bose Course LT bra sandy gume Subgrade dk bro: Somely cly It tan bra grovelly cly	Code
2 3 4 5 6 7 8 9 10 11	Subjecte dk bro: Somely cly In tan bron grovelly cly	
3 — 2.5 — 4 — 5 — 5 — 5 — 5 — 5 — 5 — 5 — 5 —	Subjecte dk bro: Somely cly In tan bron grovelly cly	
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G. Zeihen ew Chief, Contractor SHR		<u></u> -19

Dwi 17 100 -0 - 1-0	no.	le No	
	Charles & A. I.		WINDER
J	Casino	/c:	Person
Elev Water		Pipe Installed	
Comments:			
			:
0.0 10" ASPHACH			
0.6 - SAWOT BR	SPT/SHELBYS	PSI	RATE
GRAVEL	1.0-2.5	No COUNTS	•
20.0 - BOH.	25-4.0	Do Cours	
0011,	DIE SAMPA	2.5 4.0	
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	1	20.0 NO SAN	aks
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Project No	Contro		
Project Name RESEARCH	Proj - sta	SILVE	R CITY
Core Log. No. <u>CL-3-14-C</u>			
Driller MATBERRY Cr			
Date 4/15/02 Drill Staco	Shelbys	# Bag	Samples
Drilling Method - Augers 8"	Casing	<u>/</u> Size	/Bit <u>F6R</u>
Elev Water Le	velPi	pe Installed	
Comments:		==========	
		********	***********
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BROWA SANDY	0.7	BAL	
GRAUEL	1.0-2.5	SS 4	
20.0	2.5-4.0	55 ई	BAG
BOH	<u></u>		
	DrillED-to	30 No	SAMA
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	a		

Location: Silver City
Longitude: 112°11' W
Lattitude: 46°45' N

SHEET 1: DISTRESS SURVEY

DATE OF DISTRESS SURVEY (MONTH/DAY/YEAR) SURVEYOR 1: WT SURVEYOR 2:						
		SEVERITY LEV	/EI			
DISTRESS		LOW	MODERATE	HIGH		
CRACKING	G		· · · · · · · · · · · · · · · · · · ·			
1	FATIGUE CRACKING (SQUARE METERS)	0.0	0.0	0.0		
2	BLOCK CRACKING (SQUARE METERS)	0.0	0.0	0.0		
3	EDGE CRACKING (METERS)	0.0		0.0		
4	LONGITUDINAL CRACKING					
	4a. Wheelpath (Meters) Length Sealed (Meters)	0.0		0.0		
	4b. Non-Wheelpath (Meters) Length Sealed (Meters)	0.0		0.0		
5	REFLECTION CRACKING AT JOINTS	Not Recorde	d			
6	TRANSVERSE CRACKING Number of Cracks Length (Meters) Length Sealed	0.0	0.0	0 0.0 0.0		
PATCHING AND POTHOLES						
7	PATCH / PATCH DETERIORATION (Number) (Square Meters)	0.0		0.0		
8	Potholes (Number) (Square Meters)	0.0		0.0		

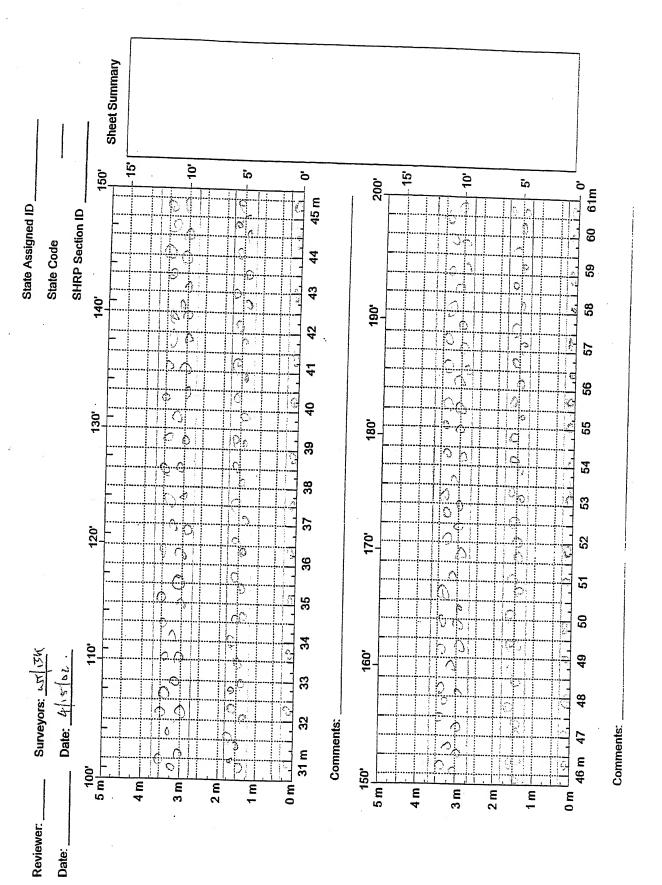
Location: Silver City
Longitude: 112°11' W
Lattitude: 46°45' N

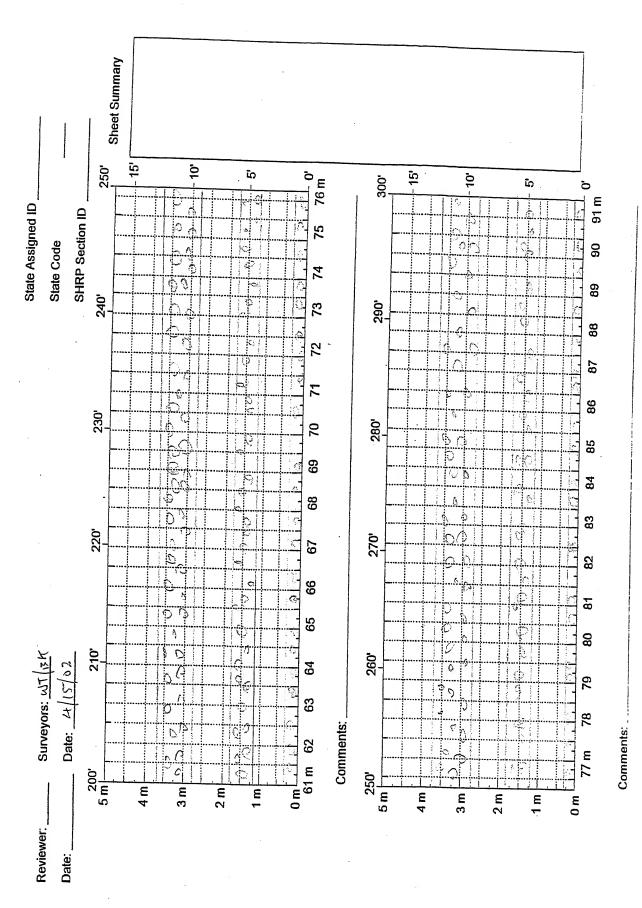
SHEET 2: DISTRESS SURVEY

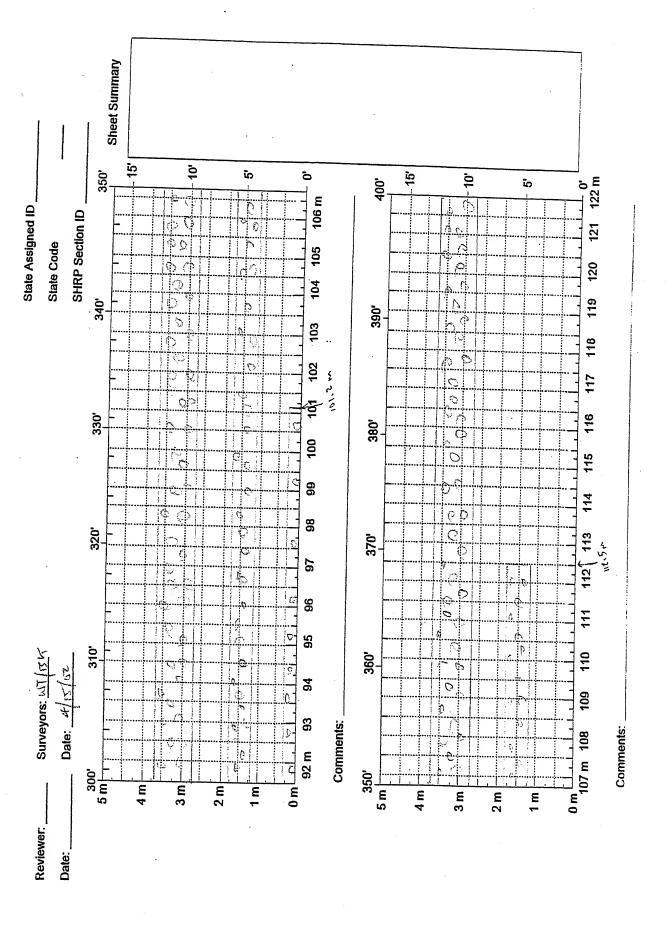
DATE SURV	OF DISTRESS SURVEY (MON EYOR 1:	ITH/DAY/YI WT	EAR) SURVEYOR 2:	4/15/02
			JOHVETON 2.	BS
			SEVERITY LEVEL	
DISTE	RESS TYPE		N/A	
SURF	ACE DEFORMATION			
9	RUTTING - REFER TO P	ROFILE D	ATA	
10	SHOVING (Number) (Square Meters)			0.0
SURF	ACE DEFECTS			
11	BLEEDING (Square Meters)			0.0
12	POLISHED AGGREGATE (Square Meters)			0.0
13	RAVELING (Square Meters)			237.5
MISCE	LLANEOUS DISTRESSES			
14	LANE-TO-SHOULDER DF	OPOFF - 1	Not Recorded	
15	WATER BLEEDING AND I (Number) Length of Affected Paveme (Meters)			0.0
16	OTHER (Describe) the only distress.	Recently	chip sealed. Raveling of c	hip seal is

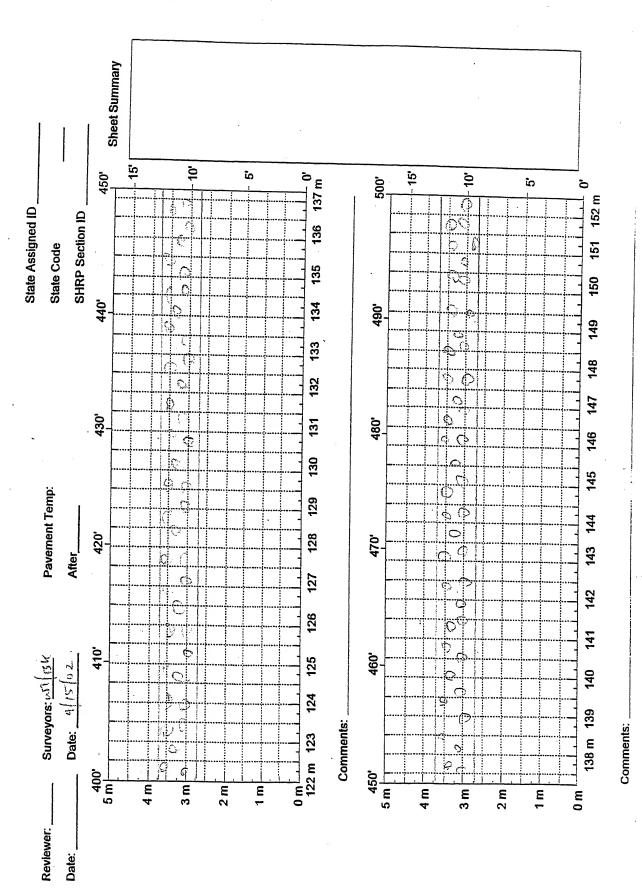
Sheet Summary 15 -10 15 m - 15 ີລ 10 ວັ 50, 100' 30 m State Assigned ID SHRP Section ID Ø 7 State Code 4 29 28 27 26 24 23 22 21 20 5 18 17 Ε 16 m 0

Comments:









Location: Longitude:

Silver City 112°11' W

Lattitude:

46°45' N

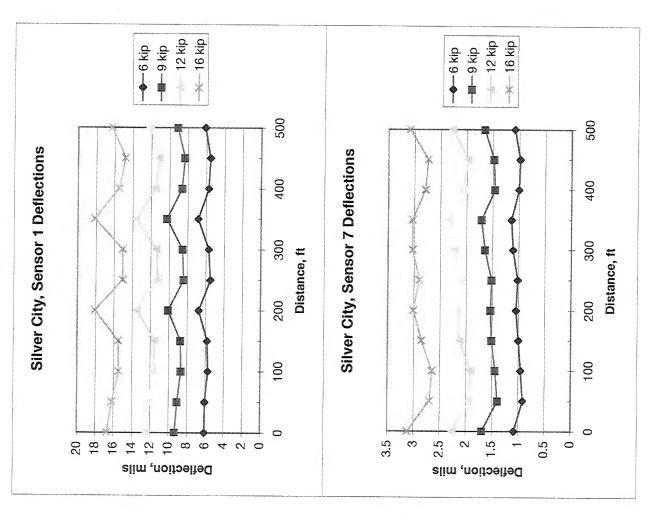
FWD Data

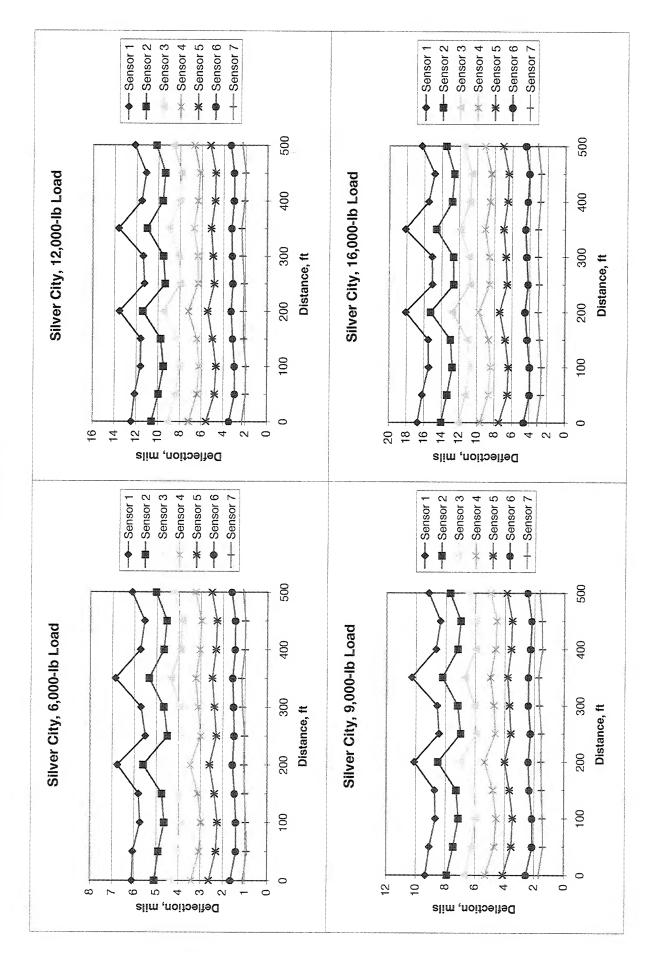
Test Date: 10/7/01

Layer	Material	Average
	Туре	Thickness
		in.
1	ACP	4.9
2	Base	7.0
3	Subgrade	-

Station	Load	Deflection 1	Deflection 2	Deflection 3	Deflection 4	Deflection 5	Deflection 6	Deflection 7
ft	kips	mils						
0+00	7.16	7.27	6.07	5.19	4.07	3.13	1.96	1.29
0+00	9.63	9.98	8.44	7.19	5.66	4.39	2.73	1.81
0+00	12.07	12.50	10.63	9.12	7.20	5.59	3.48	2.27
0+00	15.49	16.19	13.59	11.68	9.29	7.22	4.48	3.02
0+50	7.02	7.08	5.74	4.76	3.59	2.70	1.64	1.07
0+50	9.61	9.69	7.96	6.64	5.01	3.78	2.28	1.49
0+50	12.00	12.12	9.95	8.37	6.39	4.80	2.93	1.94
0+50	15.40	15.57	12.86	10.84	8.32	6.25	3.83	2.59
1+00	6.96	6.64	5.39	4.50	3.46	2.60	1.62	1.11
1+00	9.54	9.18	7.54	6.32	4.84	3.65	2.27	1.53
1+00	11.96	11.54	9.45	7.98	6.19	4.65	2.95	1.91
1+00	15.34	14.81	12.23	10.34	8.07	6.12	3.80	2.54
1+50	6.95	6.72	5.51	4.64	3.62	2.76	1.70	1.16
1+50	9.65	9.35	7.79	6.56	5.12	3.94	2.50	1.62
1+50	11.88	11.45	9.66	8.14	6.36	4.95	3.10	2.10
1+50	15.36	14.89	12.47	10.61	8.30	6.49	4.09	2.74
2+00	6.98	7.86	6.50	5.39	4.04	3.02	1.81	1.22
2+00	9.55	10.71	9.02	7.46	5.69	4.24	2.55	1.63
2+00	11.91	13.42	11.30	9.44	7.14	5.40	3.26	2.14
2+00	15.41	17.41	14.69	12.32	9.41	7.13	4.34	2.90
2+50	6.95	6.37	5.21	4.42	3.48	2.66	1.72	1.18
2+50	9.50	8.89	7.35	6.24	4.89	3.77	2.38	1.60
2+50	12.08	11.33	9.41	8.00	6.35	4.87	3.14	2.10
2+50	15.45	14.53	12.20	10.38	8.24	6.32	4.03	2.80

Station	Load	Deflection 1	Deflection 2	Deflection 3	Deflection 4	Deflection 5	Deflection 6	Deflection 7
ft	kips	mils						
3+00	6.96	6.60	5.41	4.58	3.62	2.77	1.76	1.29
3+00	9.53	9.06	7.59	6.37	5.00	3.89	2.54	1.74
3+00	12.07	11.43	9.57	8.16	6.39	4.98	3.21	2.24
3+00	15.42	14.54	12.21	10.47	8.28	6.44	4.17	2.92
3+50	6.97	7.96	6.19	5.06	3.75	2.88	1.81	1.33
3+50	9.50	10.85	8.66	7.06	5.24	4.01	2.53	1.81
3+50	12.00	13.61	11.01	8.98	6.72	5.14	3.25	2.33
3+50	15.56	17.63	14.21	11.56	8.82	6.77	4.33	2.95
4+00	6.94	6.62	5.40	4.53	3.51	2.68	1.68	1.16
4+00	9.54	9.16	7.60	6.31	4.89	3.78	2.40	1.55
4+00	11.99	11.51	9.57	8.05	6.33	4.78	3.04	2.07
4+00	15.31	14.84	12.26	10.36	8.14	6.23	4.03	2.67
4+50	7.00	6.46	5.29	4.47	3.47	2.65	1.68	1.15
4+50	9.53	8.84	7.39	6.25	4.81	3.70	2.31	1.57
4+50	11.99	11.11	9.36	7.86	6.17	4.73	3.04	1.98
4+50	15.41	14.28	12.12	10.21	8.05	6.17	3.90	2.64
5+00	6.95	7.08	5.82	4.88	3.75	2.91	1.86	1.26
5+00	9.60	9.75	8.21	6.86	5.28	4.12	2.63	1.77
5+00	11.93	12.08	10.12	8.55	6.64	5.19	3.32	2.26
5+00	15.30	15.57	12.92	10.98	8.68	6.72	4.24	2.95



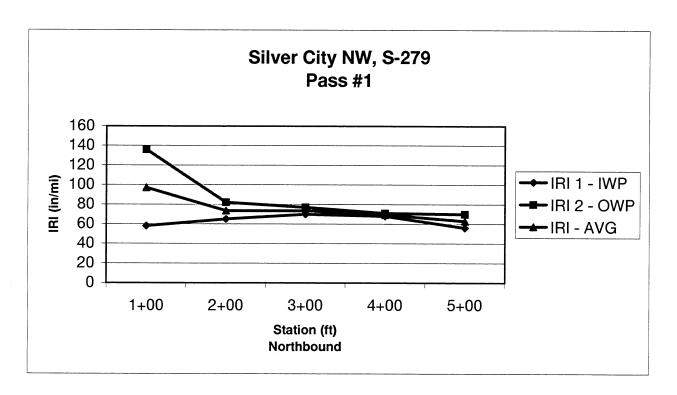


Location: Silver City
Longitude: 112°11' W
Lattitude: 46°45' N

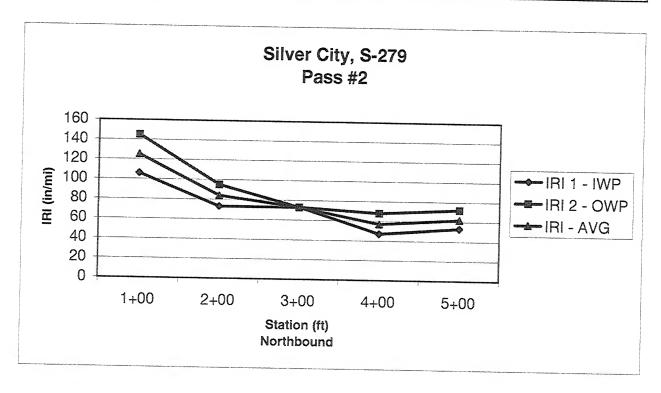
Profile Data

Test Date: __10/16/01

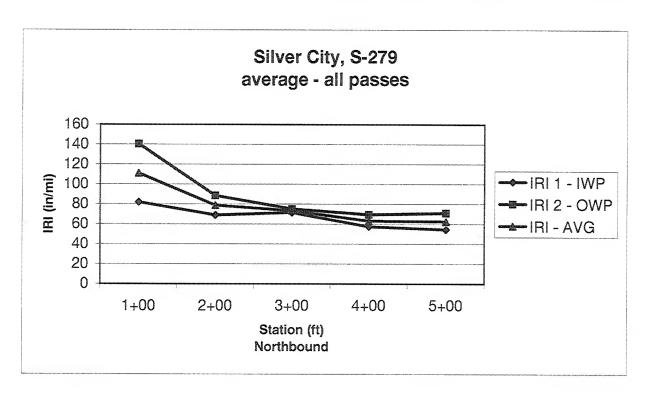
Station	From	To	Length	Rut Depth	Rut Depth	IWP	OWP	AVG.
				Average	Std.Dev.	IRI	IRI	IRI
ft.	f	t.	ft.	ir	า.		in./mi.	
1+00	0	100	100	0.16	0.034	58	136	97
2+00	100	200	100	0.15	0.034	65	82	74
3+00	200	300	100	0.16	0.030	70	77	74
4+00	300	400	100	0.15	0.033	68	71	70
5+00	400	500	100	0.16	0.035	56	70	63
AVG.				0.156	0.0332	63.4	87.2	75.3
STD.				0.005	0.002	6.148	27.707	12.868



Station	From	То	Length	Rut Depth	Rut Depth	IWP	OWP	A\(\cappa\)
		-	. 9	·	. 1			AVG.
ft.	<u>_</u>			Average	Std.Dev.	IRI	IRI	IRI
<u></u>	ft.		ft.	ir	1.		in./mi.	***************************************
1+00	0	100	100	0.15	0.039	106	145	125
2+00	100	200	100	0.15	0.047	73		
3+00	200	300	100	0.17	0.047	8	95	84
4+00	300	400	1		1	73	73	73
5+00	1		100	0.16	0.029	47	68	57
<u> </u>	400	500	100	0.16	0.033	53	72	62
AVG.				0.158	0.036	70.4	90.6	80.2
STD.				0.008	0.007	23.082		
································	L			0.000	0.007	23.082	32.192	27.124



Station	From	То	Length	Rut Depth Average	Rut Depth Std.Dev.	IWP IRI	OWP IRI	AVG. IRI
ft.	ft		ft.	ir	ો.		in./mi.	
1+00	0	100	100	0.16	0.037	82	140.5	111
2+00	100	200	100	0.15	0.041	69	88.5	78.75
3+00	200	300	100	0.17	0.031	71.5	75	73.25
4+00	300	400	100	0.16	0.031	57.5	69.5	63.25
5+00	400	500	100	0.16	0.034	54.5	71	62.5
AVG.				0.157	0.035	66.9	88.9	77.8
STD.				0.006	0.004	11.132	29.802	19.809



APPENDIX B BECKHILL/DEERLODGE

Location:

Beckhill / Deerlodge

Longitude:

112°43' W

Lattitude:

46°28' N

Pavement Structure

Date:

March 2002

			Thickness, in		7
_ayer#	Material Type	Before	After	Average	Commets
1	ACP	3.9	4.7	4.3	Chip Seal
2	Pulverized	7.2	9.0	8.1	
3	Existing Base	31.7	34.5	33.1	Dark Brown Sandy Gravel
4	Subgrade	_	_	-	Brown-Gray Clayey Gravel

Materials Sampling

Date:

4/16/02

Material Type	Quantity	Comments
ACP	14 cores	2-10" & 12-6" cores
Base	4 bags	
Subgrade	7 bags	1 with 50 blows

SHRP REGION	FIELD MATERIAL SAMPLING	ATE CODE
STATE MT	AND FIELD TESTING	RP ASSIGNED ID
SAMPLE /TEST: (2) Position	(UZ) ROUTE/HTGHWAY T-GA T	RT (outer) Direction East
4.3° Asphalt	CCTOM V TO LOT ALCEE SECTION	FIELD SET NO
OPERATOR Dan M.	LOG OF SHOULDER PROBE EQUIPMENT USED SHI	DCG SHEET: 08
AUGERING DATE 4 - 16 - 62	TOCATION STATION, AS	EET NUMBER / OF / AUGER PROBE NUMBER /
TOT OF ROCK BASED ON:	OFFSFT:	c
NOTE: SHOULDER AUGER PROBE	IS AN OPTIONAL ITEM, AS DIRECTED I	BY SAR.
(feet) Surface (Fee	t) Material Description t)	Material Code
	Recycled Asphalt	OLO RECYCLEO PMS
2 2 .5 Below FMS B	Brbon sardy gravel i	A-1 (Below PMS Base) -0.6- 1.0 Sample
3.6	3 ose Course	1.0 - 1.5 sample
	Brn gravelly sound	2.5' Below Bose 0+ PMS - SPLIT
4.6	<u>Subgrade</u>	SPOON BLOW COUNT
66	gry ban clayer gravel	=50 2 6.5 M TOTAL
8	(plastic clay)	4,0' Unsuressful Shelly Tale
7.6		4.0-5.6 Somple
10	thorn's could y Highly Plast Cly	5.0-6.0 Somple
11		
12		
13		
14	8, 19 30 19 19 19 19 19 19 19 19 19 19 19 19 19	n right .
	gra-dram Hill	-
15	grg-drgry Highly plast city w/somesand	**************************************
15.6	arace!	
	gravel no saville	. 34.
	- CANTACE	
20		
REFUSAL WITHIN 20 FEET (Y/N)	:N DEPTH TO REFUSAL	:(FEET)
ERTIFIED G-Zeihen Crew Chief, Contractor	VERIFIED AND APPROVED	MONTH-DAY-YEAR

SHRP REGION STATE MT LTPP EXPERIMENT Beck Hill CE) SAMPLE/TEST: (a) Before Secti OPERATOR Don M. EQ AUGERING DATE 4 - 16 - 02 L TOP OF ROCK BASED ON: NOTE: SHOULDER AUGER PROBE IS		LOG OF SHOULDER PROBE JIPMENT USED CATION STATION: For Find	SHRP ASSIGNED ID Lane Ar (ourse) Direction DIRECTION DCG SHEET: 08 SHEET NUMBER / OF / AUGER PROBE NUMBER
Scale (feet)	Depth from Surface (Feet)	Material Description	Material
1 .	PAS	Plane Min Circle	Code
2	Man Pulverized	Plant Mix Surfacing	4 - 8 -
3	-35"	dh bra sandy grave (aggroyote base	G-1' of Bose
4	4.0*	This org soudy ely ~ 5.0	1 - 1.5' of Bose 3
6	Slow Drilling	brn-315 hnn sandy c gravel Subgrode	leger sample 0-9 n Subgrade
7 8		Coarse gravel some clay	
9		bra gravelly ely .5"	
10		dusing sandy sty	
11		Highly plastic & farms	10 US
12		· •	
13	12.5	La guer leve 4 1/1	
14		Cly w/some coarse sand	sne
15	15.0		The state of the s
16	16.0	Course gravel	
	16-5-	ara cha	
18	·	Coarse gravels and	

REFUSAL WITHIN 20 FEET (Y/N): <u>//</u> DE	PTH TO REFUSAL:	(FEET)
CERTIFIED	VERIFIED AND AF	PROVED	MONTH-DAY-YEAR 19
Crew Chief, Contractor Affiliation: MOT	SHRP Representati	ve	Date

interpedded plastic clays wisome sond

18

19

20

	Contro			
Project Name RESEARCH P				
Core Log. No. CL-3-18-08				
Driller MAYBERRY Cre				
Date 4/16/02 Drill 50mc0				
Drilling Method - Augers 8"	Casing	<u>/</u> Size	_/BitF6R	
Elev Water Lev	el Pi	pe Installed		
Comments:				
0.0- ASPILANT 0.6				
	O.6-1.0	BAG SAN		
BRAUEL BR.		SS		
5.5 CLAYEE	6.0	BAG SA	1186-0	*.
SAND GREY	DRILLED TO			
W/S GRAVEL	JAC PACS 10	20'		
20.0		No	SAMP	
ВОН				
	·	·		
			-	
,			·	
			- 	

. .

	Project No	Contro	1 No. <u>8000 1</u>	
	Project Name RESEARCH To	20 j Sta.	BECK	Hier
	Core Log. No. CL-3-16-0=	Mole 1	No. 2	
	Driller MAYBERRY Crev			
	Date 4 14 03 Drill Simco			
	Drilling Method - Augers 8"	Casing	/Size	Bit FGC
	Elev Water Leve	el Pi	pe Installed	
	Comments:			
				•
		·		
/				
	4			
	and a	SPT/SHELBYS		RATE
. 7	GRAVEL BR SANDY		SAMPLE	
	BRAVEL W/S CONSTOS			
	85 CLATEE BR		SS	· .
	SANDY GRAVEL		SAMPLE	
	20.0	5.7 BAL	SAMPLE	
	BOH.		TO 20'	
		No SA	mores	
	·			
			-	
• !				

• *

Location:

Beckhill / Deerlodge

Longitude: Lattitude: 112°43' W 46°28' N

SHEET 1: DISTRESS SURVEY

DATE OF I	DISTRESS SURVEY (MONTH/DAY/YEAR) R 1: WT	SURVEYOR	R 2:	4/16/02 BS
		SEVERITY LE	VEL	-
DISTRESS		LOW	MODERATE	HIGH
CRACKING	3			_
1	FATIGUE CRACKING (SQUARE METERS)	0.	0.0	0.0
2	BLOCK CRACKING (SQUARE METERS)	0.0	0.0	0.0
3	EDGE CRACKING (METERS)	0.0	0.0	0.0
4	LONGITUDINAL CRACKING			
	4a. Wheelpath (Meters) Length Sealed (Meters)	0.0		0.0
	4b. Non-Wheelpath (Meters) Length Sealed (Meters)	0.0	 	0.0
5	REFLECTION CRACKING AT JOINTS	Not Recorde	d	
6	TRANSVERSE CRACKING Number of Cracks Length (Meters) Length Sealed	0.0	0.0	0 0.0 0.0
FATORING	AND FOINGLES			
7	PATCH / PATCH DETERIORATION (Number) (Square Meters)	0.0		0.0
8	Potholes (Number) (Square Meters)	0.0		0.0

Location: Beckhill / Deerlodge
Longitude: 112°43' W
Lattitude: 46°28' N

SHEET 2: DISTRESS SURVEY

DATE OF DISTRESS SURVEY (MONTH/DAY/YEAR)			4/16/02
SURV	EYOR 1:	WT SURVEYOR 2:	BS
		SEVERITY LEVEL	
DISTR	ESS TYPE	N/A	
SURFA	ACE DEFORMATION		
9	RUTTING - REFER TO	PROFILE DATA	
10	SHOVING (Number) (Square Meters)		0.0
SURFA	ACE DEFECTS		
11	BLEEDING (Square Meters)		0.0
12	POLISHED AGGREGA (Square Meters)	TE	0.0
13	RAVELING (Square Meters)		0.0
MISCEI	LANEOUS DISTRESSES		
14	LANE-TO-SHOULDER	DROPOFF - Not Recorded	
15	WATER BLEEDING AN (Number) Length of Affected Pave (Meters)		0.0
16	OTHER (Describe) wheelpath	Snow plough damage from 225 ft to	250 ft on outer

Sheet Summary NOWE 15 - 10' 2 15 m - 15' - 10. ស 50 ò 100' 30 m State Assigned ID SHRP Section ID 7 State Code 13 40, 4 06 7 26 19 25 30, 80 6 24 After 23 Pavement Temp: 22 Before 20, , 2 9 2 S 20 19 10, .09 ന Date: 4/15/02 Surveyors: LT 18 2 17 Comments: 16 m E O 5 m 50' - m € 3 13 2 m 13 E 0 4 m 3 m 2 m 1 3 E 0 Section Summary Reviewer: Date: __

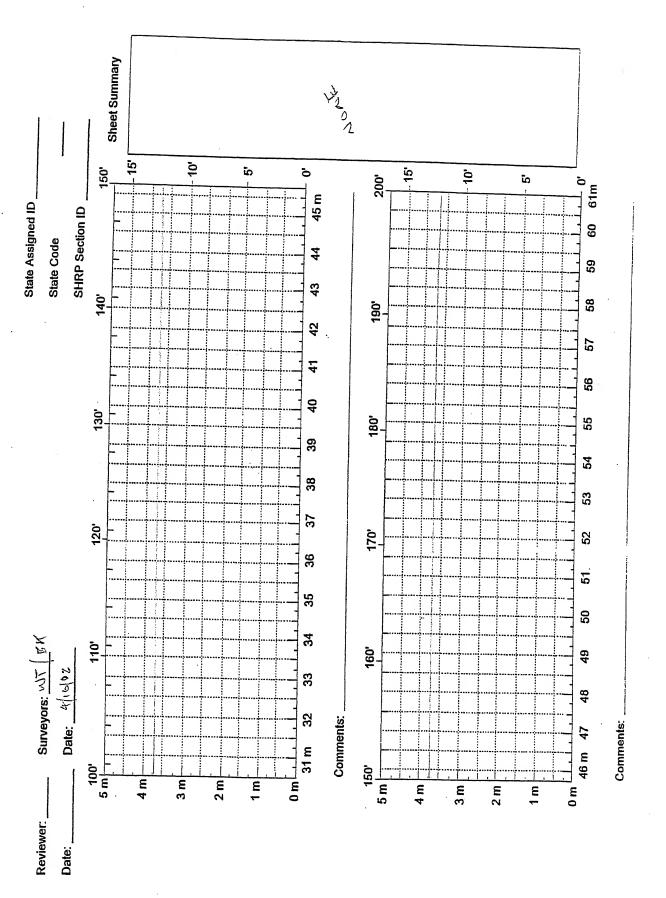
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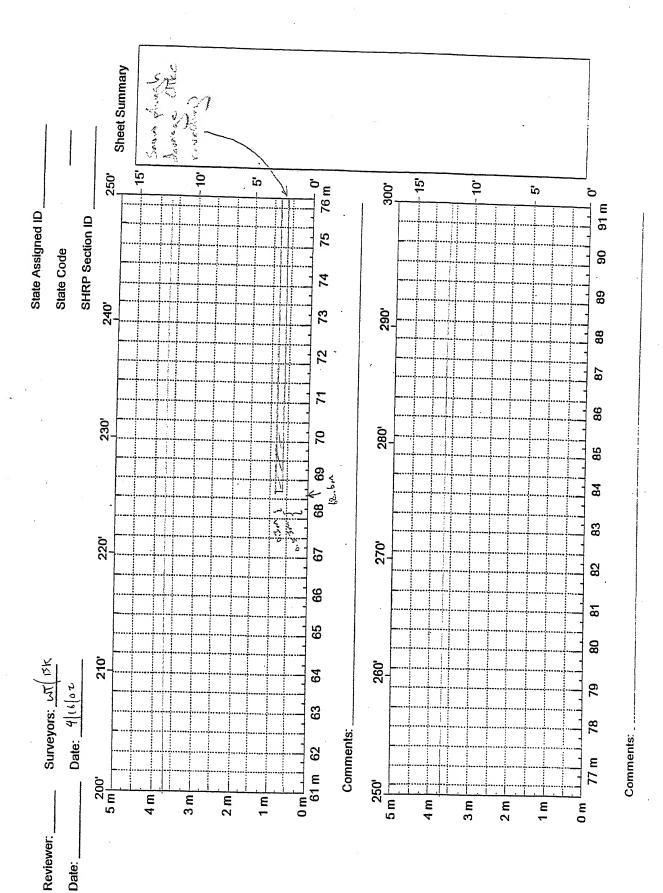
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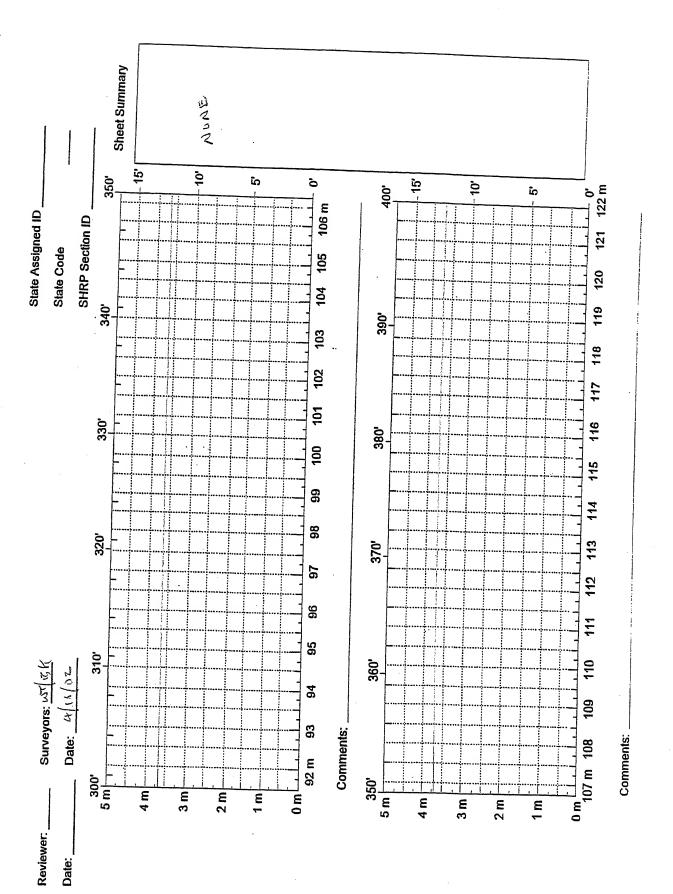
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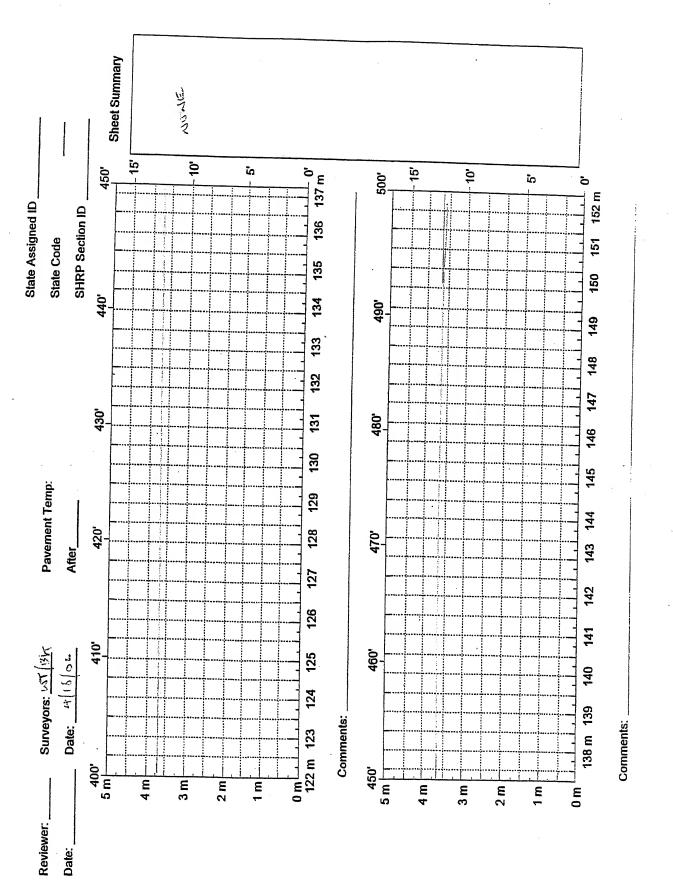
Comments:

Year where









Location: Beckhill / Deerlodge

Longitude:

112°43' W 46°28' N Lattitude:

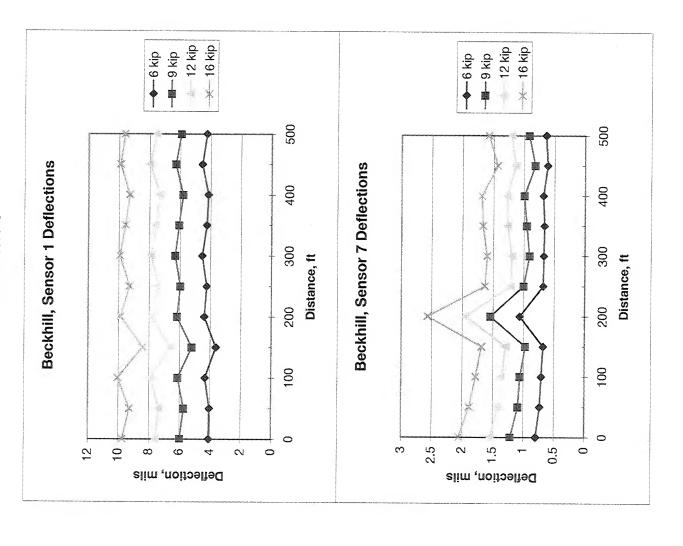
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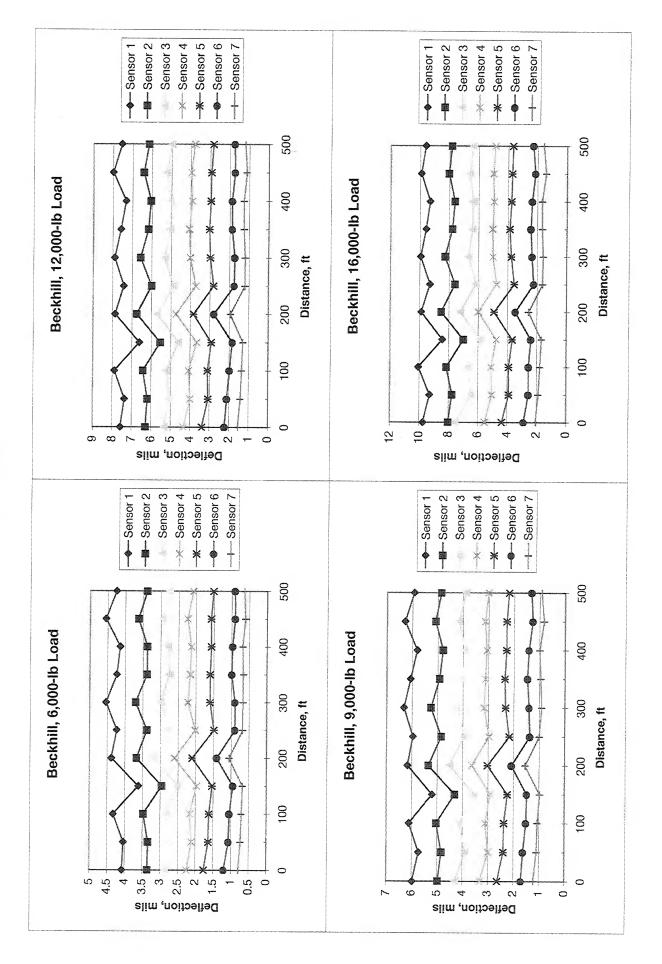
Test Date: 10/8/01

Layer	Material Type	Average Thickness
	7,50	in.
1	ACP	4.3
2	Pulverized	8.1
3	Existing Base	33.1
4	Subgrade	-

Station	Load	Deflection 1	Deflection 2	Deflection 3	Deflection 4	Dofloction 5	Deflection	JD (1 .: =
ft	kips	mils	mils	mils	mils			
0+00	7.02	4.77	3.93	3.35		mils	mils	mils
0+00	9.83	6.53	5.43	4.69	2.63 3.62	2.07	1.41	0.93
0+00	12.49	7.88	6.54	5.54		2.88	1.86	1.32
0+00	15.51	9.44	7.77	7.31	4.50	3.52	2.31	1.60
0+50	6.90	4.64	3.84	3.13	5.35	4.23	2.78	1.99
0+50	9.79	6.23	5.25		2.43	1.88	1.23	0.84
0+50	12.40	7.61	6.39	4.24	3.26	2.61	1.76	1.18
0+50	15.55	9.02	7.54	5.24	4.12	3.17	2.18	1.46
1+00	6.89	4.97	3.99	6.26	4.90	3.79	2.48	1.83
1+00	9.81	6.66	5.49	3.25	2.49	1.86	1.20	0.81
1+00	12.24	8.04	6.55	4.48	3.39	2.59	1.64	1.15
1+00	15.55	9.77	7.92	5.32	4.16	3.16	2.02	1.38
1+50	6.92	4.17		6.48	4.96	3.81	2.48	1.73
1+50	9.76	5.64	3.41	2.88	2.27	1.77	1.09	0.78
1+50	12.29	6.76	4.68	3.84	3.16	2.43	1.60	1.05
1+50	15.57	8.20	5.67	4.72	3.75	2.98	1.88	1.32
2+00	6.90		6.81	5.70	4.64	3.58	2.34	1.64
2+00	9.81	5.04	4.22	3.66	2.99	2.41	1.62	1.22
2+00	12.38	6.73	5.83	4.93	3.96	3.30	2.27	1.68
2+00	15.57	8.11	6.97	5.88	4.88	3.95	2.88	2.01
2+50		9.61	8.29	7.03	5.82	4.79	3.39	2.50
2+50	6.90	4.87	3.89	3.19	2.31	1.71	1.03	0.78
2+50	9.82	6.51	5.29	4.30	3.24	2.38	1.49	1.09
2+50	12.38	7.66	6.19	5.03	3.84	2.90	1.81	1.24
2+30	15.62	9.07	7.41	6.00	4.65	3.48	2.19	1.59

Station	Load	Deflection 1	Deflection 2	Deflection 3	Deflection 4	Deflection 5	Deflection 6	Deflection 7
ft	kips	mils						
3+00	6.89	5.21	4.25	3.43	2.56	1.84	1.03	0.77
3+00	9.85	6.91	5.75	4.60	3.46	2.55	1.53	0.99
3+00	12.26	8.06	6.71	5.44	4.10	3.05	1.77	1.22
3+00	15.53	9.64	8.04	6.48	4.87	3.66	2.29	1.55
3+50	6.90	4.87	3.89	3.17	2.49	1.84	1.14	0.76
3+50	9.75	6.56	5.33	4.34	3.38	2.56	1.59	1.03
3+50	12.27	7.75	6.31	5.16	4.15	3.10	1.91	1.29
3+50	15.53	9.29	7.56	6.23	4.89	3.77	2.38	1.62
4+00	6.89	4.76	3.88	3.20	2.45	1.80	1.12	0.78
4+00	9.87	6.37	5.25	4.30	3.37	2.52	1.55	1.09
4+00	12.37	7.55	6.23	5.18	4.04	3.06	1.94	1.31
4+00	15.55	9.04	7.40	6.20	4.81	3.67	2.29	1.64
4+50	6.85	5.19	4.14	3.35	2.56	1.80	1.03	0.70
4+50	9.77	6.82	5.52	4.51	3.41	2.49	1.38	0.89
4+50	12.30	8.18	6.58	5.38	4.08	3.02	1.78	1.16
4+50	15.56	9.64	7.81	6.41	4.86	3.63	2.09	1.39
5+00	6.86	4.86	3.87	3.15	2.38	1.73	1.04	0.73
5+00	9.81	6.47	5.30	4.25	3.27	2.40	1.44	1.00
5+00	12.38	7.78	6.36	5.15	3.93	2.94	1.81	1.24
5+00	15.45	9.28	7.56	6.16	4.71	3.55	2.22	1.52





Location:

Beckhill / Deerlodge

Longitude: 112°43' W

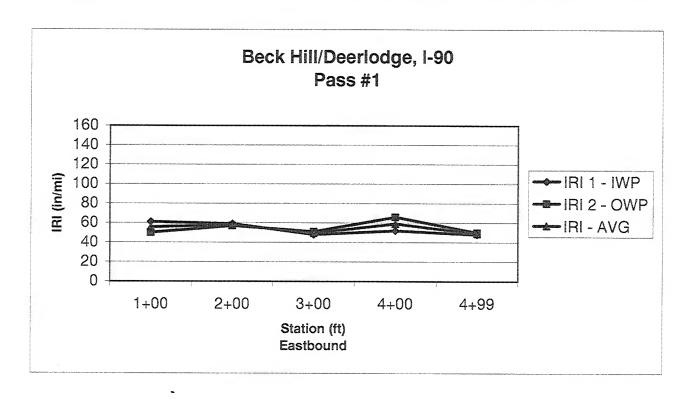
Lattitude:

46°28' N

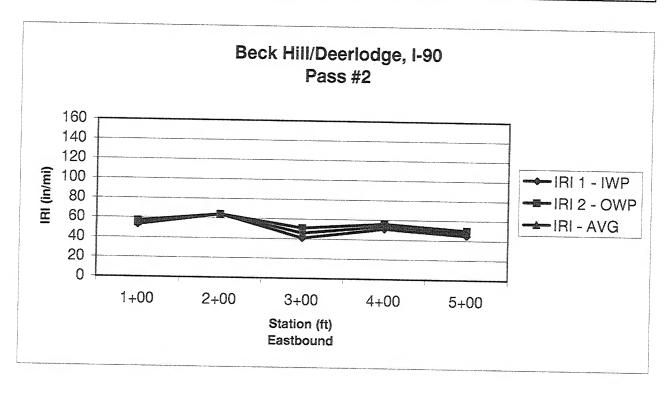
Profile Data

Test Date: 10/16/01

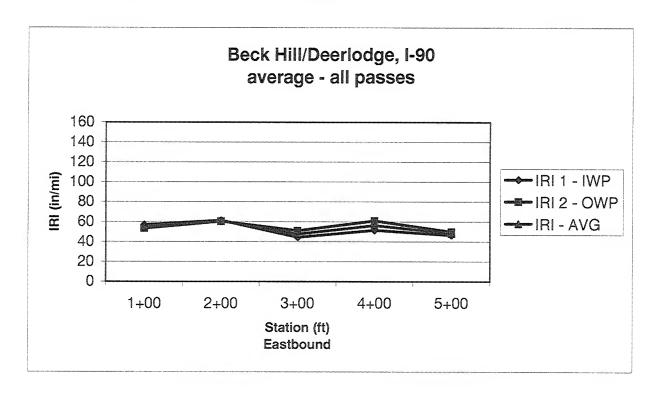
,	······		,	,				
Station	From	То	Length	Rut Depth	Rut Depth	IWP	OWP	AVG.
				Average	Std.Dev.	IRI	IRI	IRI
ft.	ft		ft.	ir	٦.		in./mi.	
1+00	0	100	100	0.02	0.015	61	50	56
2+00	100	200	100	0.02	0.015	59	57	58
3+00	200	300	100	0.01	0.012	48	51	50
4+00	300	400	100	0.04	0.025	52	66	59
4+99	400	499	99	0.03	0.019	48	50	49
AVG.				0.024	0.017	53.6	54.8	54.2
STD.			***************************************	0.011	0.005	6.107	6.907	4.698



Station	From	То	Length	Rut Depth	Rut Depth	IWP	OWP	AVG.
				Average	Std.Dev.	IRI	IRI	IRI
ft.	ft.		ft.	ir			in./mi.	11 12
1+00	0	100	100	0.05	0.029	53	57	55
2+00	100	200	100	0.04	0.023	64	64	64
3+00	200	300	100	0.01	0.012	41	51	46
4+00	300	400	100	0.04	0.024	51	56	54
5+00	400	500	100	0.04	0.021	45	50	48
AVG.				0.036	0.022	50.8	55.6	53.2
STD.				0.015	0.006	8.786	5.595	7.147



Station	From	То	Length	Rut Depth Average	Rut Depth Std.Dev.	IWP IRI	OWP IRI	AVG. IRI
ft.	ft. ft.		ft.			in./mi.		
1+00	0	100	100	0.04	0.022	57	53.5	55.25
2+00	100	200	100	0.03	0.019	61.5	60.5	61
3+00	200	300	100	0.01	0.012	44.5	51	47.75
4+00	300	400	100	0.04	0.025	51.5	61	56.25
5+00	400	500	100	0.04	0.020	46.5	50	48.25
AVG.				0.030	0.020	52.2	55.2	53.7
STD.				0.012	0.005	7.103	5.227	5.641



APPENDIX C

PERMA

Location:

Perma

Longitude:

114°36′ W

Lattitude:

47°30' N

Pavement Structure

Date:

March 2002

			Thickness, i	n	1
Layer#	Material Type	Before	After	Average	Commets
1	ACP	3.5	3.1	3.3	Chip Seal
2	CSB	3.8	4.5	4.1	
3	Base	6.0	6.0	6.0	No Information Recorded
4	Subgrade	-	-	-	Brown Sandy Clay with Fine Gravel

Materials Sampling

Date:

4/17/02

Material Type	Quantity	Comments
ACP / CSB	14 cores	2-10",10-6", 2-4" cores
Base	2 bags	1 aggr.base & 1 CTB
Subgrade	8 bags	1 TBD

SHRP REGIONSTATEMT	SHRP-LTPP FIELD MATERIAL SAMPLING AND FIELD TESTING ROUTE/HIGHWAY 5-382 L ection /#/ (b) After Section LOG OF SHOULDER PROFE	SHRP ASSIGNED ID
LTPP EXPERIMENT Para	ROUTE/HIGHWAY 5-382 L	ane Direction Se
OPERATOR // //	ection <u>V#/</u> (b) After Section LOG OF SHOULDER PROBE	FIELD SET NO. DCG SHEET: 08
AUGERING DATE 4 - 17 - 62 TOP OF ROCK BASED ON:	LOG OF SHOULDER PROBE EQUIPMENT USED LOCATION STATION: R P 9.75 W. OFFSET:	SHEET NUMBER / OF /
NOTE: SHOULDER AUGER PROBE	OFFSET: 12 IS AN OPTIONAL ITEM, AS DIRECT	TED BY SAR.
Scale Depth from (feet) Surface (Feet)	et)	Material Code
3 344 CTE	Times.	
	Basa Course	SPlit spoon 326 lows
3	brn - org brn plastic cly fine gravel	w/ IST sample
4	Subgrode	Sample 21-31
6 6		5 ample 3'-6' (x2)
7	Gny Cly Highly Plastic	
9	17 Tan - pnk cly	
10	Highly Plastic Very Stiff	
_11	very stiff	* · · · ·
14		
_15	gry shale gravel. Wely	
_16	# Ann -	
_17		
_18		
_19		
USAL WITHIN 20 FEET (Y/N)). A/ DEDTH TO TIME	TIGAT:
TIFIED): <i>N</i> DEPTH TO REFE VERIFIED AND APPROVED	
G. Zeihen w Chief, Contractor		MONTH-DAY-YEAR 19
W Chief, Contractor Giliation: MDT	SHRP Representative Affiliation:	Date

SHRP REGION	FIELD MATERIAL SAMPLING	STATE CODE
STATE MT	AND PIPID MEGATIC	CUDD ACCIONED ID
LTPP EXPERIMENT Perma	ROUTE/HIGHWAY 5-382 La	Direction <0
SAMPLE/TEST: (a) Before Sect		
OPERATOR Dan M	LOG OF SHOULDER PROBE	DCG SHEET: 08
AUGERING DATE 4 - 17 - 03	QUIPMENT USED	SHEET NUMBER / OF /
TOP OF ROCK BASED ON:	OFFCET.	A) AUGER PROBE NUMBER
NOTE: SHOULDER AUGER PROBE I	S AN OPTIONAL ITEM, AS DIRECT	ED BY SAR
Scale Depth from	Material Description	Material
1200)	The Control of the State of the	Code
3.5" pms		
2 4.5" c7B		
6" Baso Course	Exist. Bose Course	Splir Spoon
	5,6	23 blows
4 . 2.	Subgrade bra Sandu Cl	
	J GW / Some f.	59mple 18"-14"
5	grave!	Semple 14"_26"
5.5		
6	LT pnk - Tan	
7	LT pnk = Tan High plost.	1/Sample 4-6
- 19 1 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1		
8	Stiff clay	
9	· · · · · · · · · · · · · · · · · · ·	
10	the second of th	<u> </u>
/0		
11	gry shale gravel w/6m	<i>ii</i> 1
	c/4	
12		
13		Flact
14 13.5		
	hon the	
15	FIRST. Cly w/ava	
16	brn plast cly w/grav	The second of th
17	and the second s	
		,
		en de Carre
	, i	
19	Frn Sandy cly - ca-1	is .
20	brn sandy cly - satilven	A
EFUSAL WITHIN 20 FEET (Y/N):_	l	
ERTIFIED G. Zeihen	VERIFIED AND APPROVED	MONTH-DAY-YEAR
rew Chief, Contractor	SHRP Representative	<u>-</u> 19
ffiliation: MDT	Affiliation:	Date

Project No	Contro			
Project Name RESEARCH	Pkoj Sta.	: HOT SPE	2905	_
Core Log. No. CL-3-17-03	Hole	No		
Driller MAYSERRY Cre	word Sam	Geotech <u>a</u>	NL ON EGR	Eb
Date 4 17 102 Drill Simco	Shelbys	# Bag	Samples	
Drilling Method - Augers 8"				
Elev Water Leve	el_ <i>UA</i> —Pi	pe Installed		
			=======================================	==
				_
				_
				_
0.0- ASPHALL 0.7	CDT/CUFIEVC	l psi	RATE	
BROWN SILTY GRADE		1	BAL	-
4	20 30	BA6		-
	60 BA6			
MOIST GREY SILT	_	TO 201		-
	NO SAMPLE			
20.0		,		
B0H7 ·				-
8047				-
B0H7				-
BOH 7				-
B0H7				-
8047				-
B0H7				-
B0H7				-

	Project No	Contro	1 No. <u>802</u>	<u> </u>
	Project Name RESEARCH PR	og Ram Sta.	: HOT SP	rs NGS
	Core Log. No. <u>C1-3-18-0</u> 2			
	Driller MAYSERRY Cre			له و عدد
	Date 117 102 Drill Simco			
	Drilling Method - Augers 8"			
	Elev Water Lev			
	=======================================		3	
(Comments:			
-				
-				
-				
_				
_	O.O. ASPHALT OB BR	0.8 55 SPT/SHELBYS	PSI	RATE
_	SILY W/S GRAVEL	14"	846	*
! -	3.0 BROWN SILT	2.0	BAG	
_	85 GREY SILT		BAL	
_	W/SOME GRAVEL	DRILLED TO	20	
_	20.0	NO SAMPLE		
	BOH	·	7	
-	<			
-				_
-			***	
_				
-				
-				
_				
_				

Location: Perma Longitude: 114°36' W Lattitude: 47°30' N

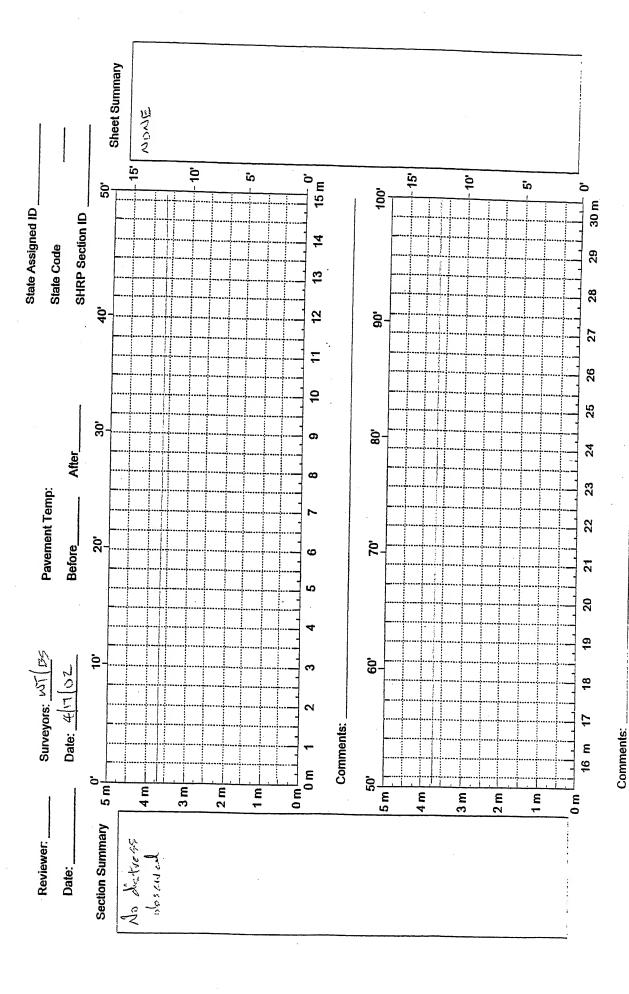
SHEET 1: DISTRESS SURVEY

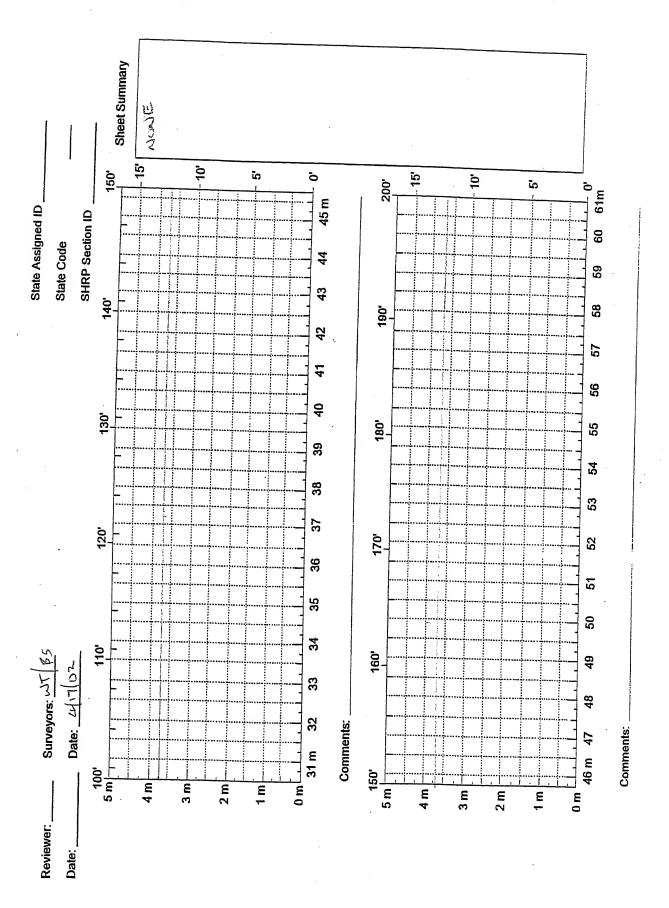
DATE OF	DISTRESS SURVEY (MONTH/DAY/YEAF DR 1: WT	SURVEYOR	2: -	4/17/02 BS
		SEVERITY LEV	'EL	
DISTRESS		LOW	MODERATE	HIGH
CRACKING	G			
1	FATIGUE CRACKING (SQUARE METERS)	0.0	0.0	0.0
2	BLOCK CRACKING			
	(SQUARE METERS)	0.0	0.0	0.0
3	EDGE CRACKING (METERS)	0.0	0.0	0.0
4	LONGITUDINAL CRACKING			
	4a. Wheelpath (Meters)	0.0	0.0	0.0
	Length Sealed (Meters)	0.0	0.0	0.0
	4b. Non-Wheelpath (Meters)	0.0	0.0	0.0
	Length Sealed (Meters)	0.0	0.0	0.0
5	REFLECTION CRACKING AT JOINTS	Not Recorded	I	
6	TRANSVERSE CRACKING			
	Number of Cracks	0		0
	Length (Meters)	0.0	 	0.0
	Length Sealed	0.0	0.0	0.0
PATCHING	AND POTHOLES			
7	PATCH / PATCH DETERIORATION (Number) (Square Meters)	0.0	 	0.0
8	Potholes (Number) (Square Meters)	0.0	 	0.0

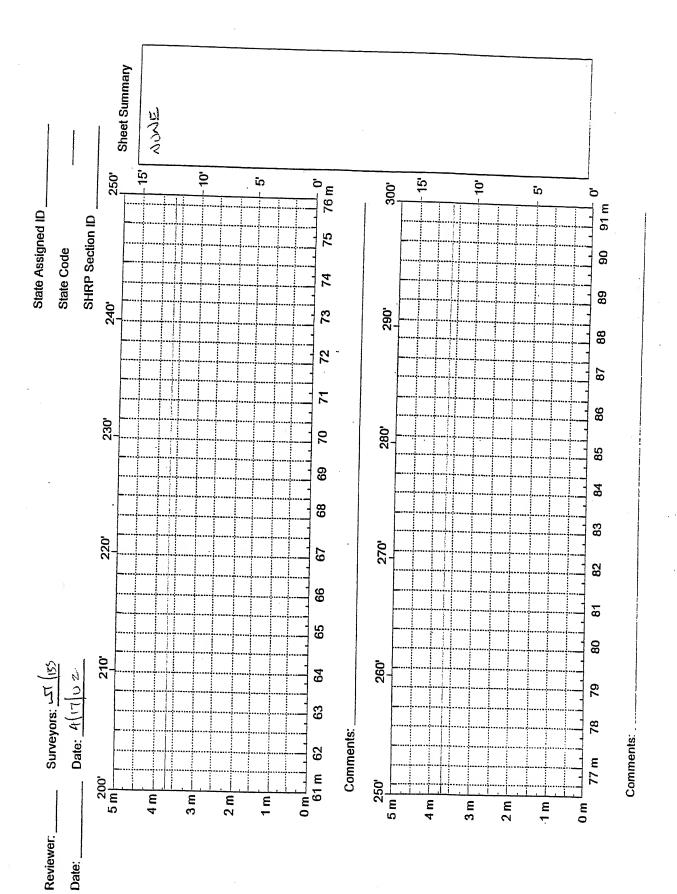
Location: Perma
Longitude: 114°36' W
Lattitude: 47°30' N

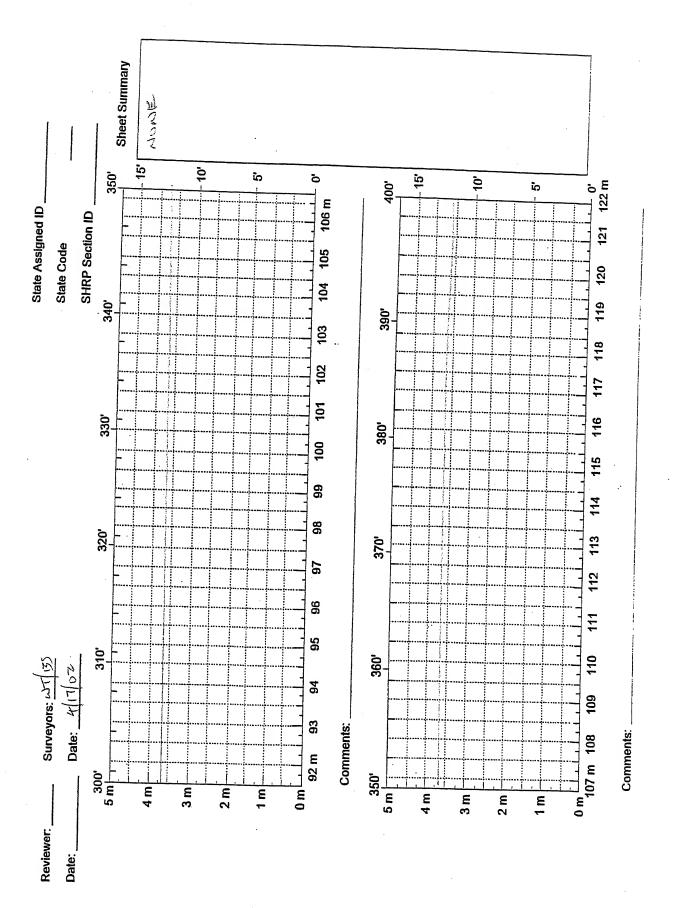
SHEET 2: DISTRESS SURVEY

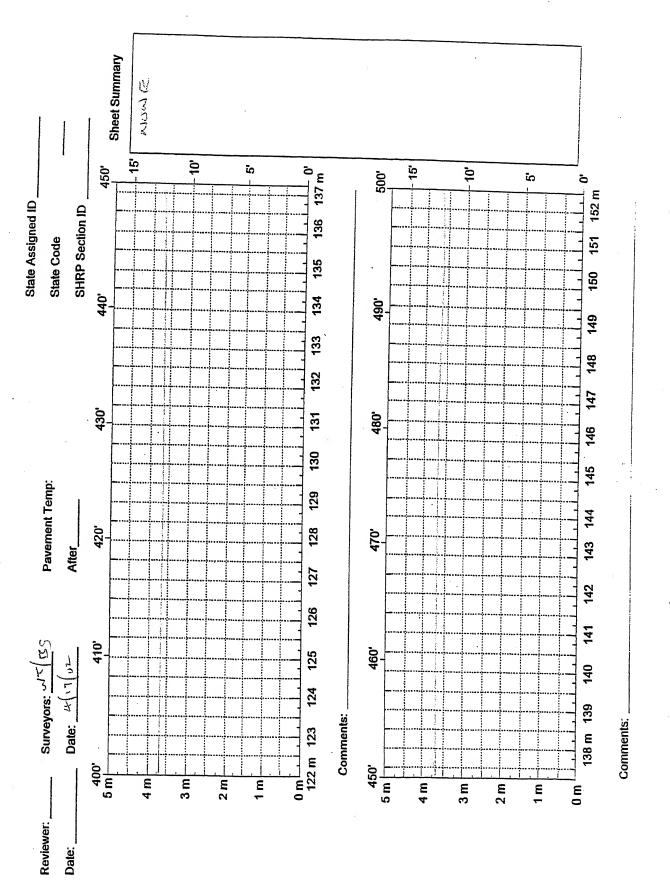
DATE OF	DISTRESS SURVEY (MONT	TH/DAY/YEAR)		4/17/02
SURVEYO	OR 1: W1	<u> </u>	SURVEYOR 2:	BS
		Cr	TVEDITY LEVEL	
DISTRESS	STYPE	21	EVERITY LEVEL N/A	
DIOTITIES	5 7 T L		14/7	
SURFACE	DEFORMATION			
9	RUTTING - REFER TO P	ROFILE DATA		
10	SHOVING (Number) (Square Meters)			0.0
SURFACE	DEFECTS			
11	BLEEDING (Square Meters)			0.0
12	POLISHED AGGREGATE (Square Meters)			0.0
13	RAVELING (Square Meters)			0.0
MISCELLA	ANEOUS DISTRESSES			
14	LANE-TO-SHOULDER DF	ROPOFF - Not R	Recorded	
15	WATER BLEEDING AND (Number) Length of Affected Paveme (Meters)			0.0
16	OTHER (Describe)	no distress obs	served	











Location: Perma
Longitude: 114°36' W
Lattitude: 47°30' N

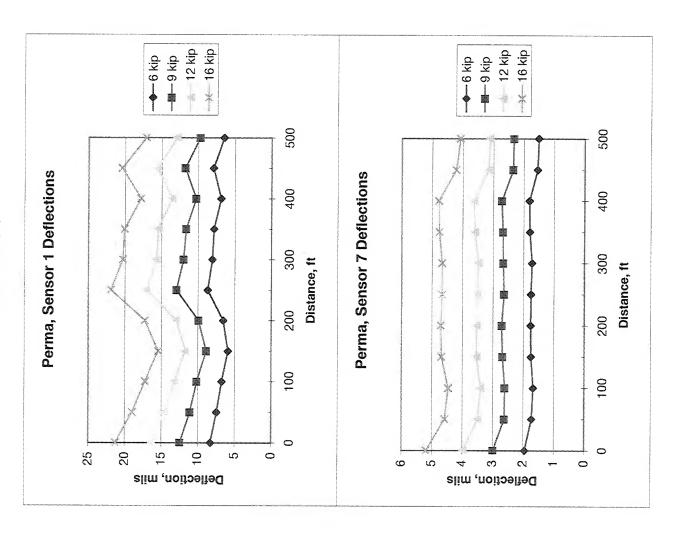
FWD Data

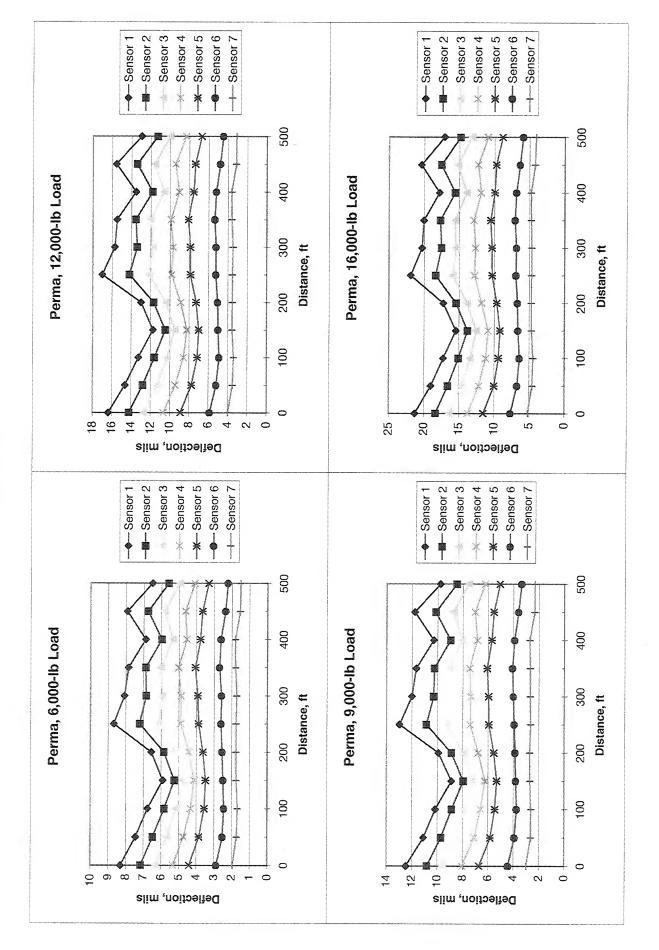
Test Date: ____10/8/01

Layer	Material	Average
	Туре	Thickness
		in.
1	ACP	3.3
2	CSB	4.1
3	Base	6.0
4	Subgrade	-

Station	Load	Deflection 1	Deflection 2	Deflection 3	Deflection 4	Deflection 5	Deflection 6	Deflection 7
ft	kips	mils						
0+00	7.20	9.95	8.59	7.60	6.40	5.29	3.45	2.34
0+00	9.71	13.45	11.66	10.35	8.69	7.24	4.77	3.22
0+00	11.90	16.22	14.11	12.58	10.57	8.81	5.81	3.95
0+00	15.02	19.97	17.23	15.40	12.92	10.83	7.20	4.87
0+50	7.19	8.93	7.76	6.81	5.67	4.62	3.03	2.07
0+50	9.76	12.03	10.52	9.25	7.70	6.32	4.25	2.84
0+50	11.96	14.58	12.74	11.27	9.39	7.71	5.16	3.49
0+50	15.19	18.05	15.75	13.98	11.58	9.51	6.40	4.35
1+00	7.16	8.07	6.95	6.13	5.16	4.24	2.92	2.00
1+00	9.70	10.95	9.56	8.47	7.10	5.89	4.03	2.81
1+00	12.00	13.25	11.58	10.28	8.58	7.15	4.89	3.40
1+00	15.28	16.47	14.41	12.82	10.71	8.96	6.11	4.26
1+50	7.14	7.03	6.25	5.66	4.91	4.14	2.96	2.08
1+50	9.79	9.66	8.64	7.81	6.79	5.78	4.14	2.92
1+50	12.07	11.81	10.53	9.53	8.26	7.03	5.02	3.56
1+50	15.22	14.70	13.14	11.93	10.32	8.72	6.27	4.46
2+00	7.14	7.80	6.95	6.19	5.27	4.31	3.03	2.09
2+00	9.69	10.67	9.56	8.54	7.29	5.96	4.17	2.92
2+00	12.07	13.06	11.75	10.47	8.92	7.32	5.08	3.55
2+00	15.39	16.60	14.85	13.35	11.36	9.26	6.44	4.53
2+50	7.08	10.24	8.51	7.24	5.78	4.58	3.08	2.07
2+50	9.59	13.82	11.57	9.85	7.89	6.33	4.19	2.81
2+50	11.82	16.76	13.99	11.98	9.67	7.73	5.17	3.47
2+50	14.96	20.48	17.17	14.88	12.00	9.65	6.46	4.37

Station	Load	Deflection 1	Deflection 2	Deflection 3	Deflection 4	Deflection 5	Deflection 6	Deflection 7
ft	kips	mils						
3+00	7.11	9.56	8.11	7.03	5.77	4.65	3.06	2.04
3+00	9.68	12.91	11.07	9.64	7.92	6.41	4.31	2.87
3+00	11.89	15.56	13.27	11.66	9.58	7.79	5.18	3.45
3+00	15.04	19.10	16.49	14.54	11.95	9.72	6.44	4.39
3+50	7.06	9.23	8.08	7.08	5.90	4.77	3.17	2.11
3+50	9.61	12.45	10.93	9.62	7.98	6.49	4.34	2.86
3+50	11.95	15.41	13.49	11.93	9.85	8.05	5.34	3.58
3+50	15.15	18.98	16.77	14.78	12.23	9.99	6.68	4.51
4+00	7.07	8.11	7.03	6.28	5.37	4.45	3.08	2.13
4+00	9.65	11.04	9.61	8.62	7.36	6.13	4.20	2.91
4+00	12.01	13.54	11.83	10.64	9.06	7.55	5.21	3.64
4+00	14.98	16.70	14.59	13.07	11.15	9.32	6.43	4.48
4+50	7.18	9.47	8.06	6.95	5.54	4.38	2.83	1.85
4+50	9.69	12.69	10.91	9.42	7.59	5.97	3.88	2.53
4+50	11.86	15.38	13.24	11.45	9.31	7.29	4.75	3.12
4+50	15.02	19.16	16.47	14.28	11.55	9.15	5.95	3.96
5+00	7.11	7.69	6.61	5.87	4.86	3.93	2.64	1.79
5+00	9.70	10.53	9.14	8.12	6.72	5.47	3.62	2.51
5+00	11.95	12.90	11.23	9.96	8.30	6.71	4.47	3.10
5+00	15.07	16.12	13.98	12.44	10.28	8.33	5.58	3.85





Location:

Perma

Longitude:

114°36' W

Lattitude:

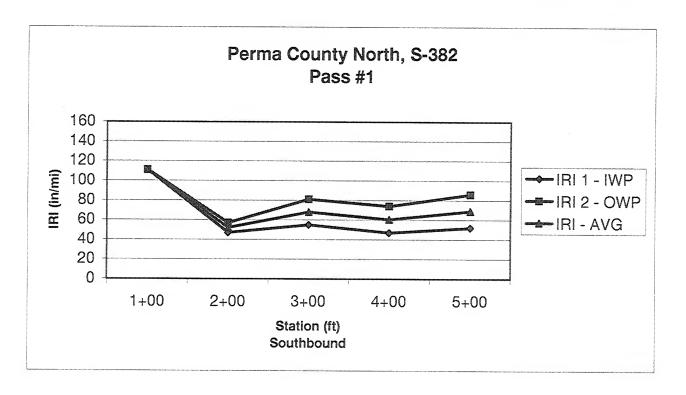
47°30' N

Profile Data

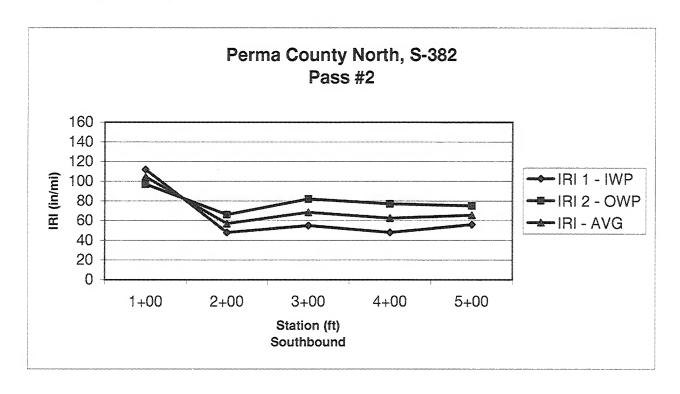
Test Date:

10/15/01

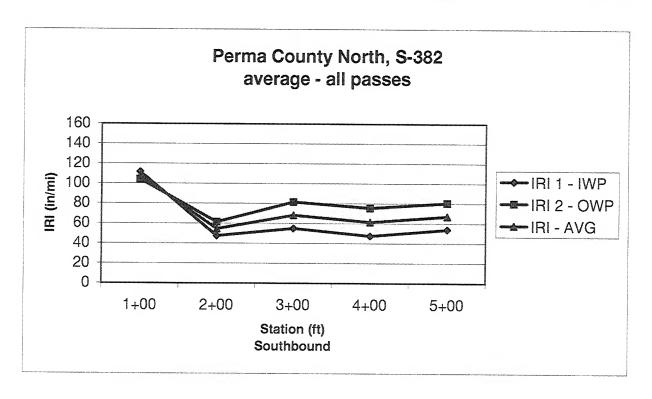
Station	From	То	Length	Rut Depth	Rut Depth	IWP	OWP	AVG.
				Average	Std.Dev.	IRI	IRI	IRI
ft.	f	t.	ft.	ir	ો .		in./mi.	
1+00	0	100	100	0.05	0.025	111	111	111
2+00	100	200	100	0.04	0.02	47	57	52
3+00	200	300	100	0.06	0.023	55	81	68
4+00	300	400	100	0.07	0.022	47	74	61
5+00	400	500	100	0.08	0.023	52	86	69
AVG.				0.06	0.023	62.4	81.8	
STD.				0.016	0.002	27.382	19.665	22.794



Station	From	То	Length	Rut Depth	Rut Depth	IWP	OWP	AVG.
				Average	Std.Dev.	IRI	IRI	IRI
ft.	f		ft.	ir	1.		in./mi.	
1+00	0	100	100	0.04	0.022	112	97	105
2+00	100	200	100	0.04	0.019	48	66	57
3+00	200	300	100	0.06	0.022	55	82	69
4+00	300	400	100	0.07	0.021	48	77	63
5+00	400	500	100	0.09	0.023	56	75	66
AVG.				0.06	0.021	63.8	79.4	71.6
STD.				0.021	0.002	27.207	11.415	18.876



Station	From	То	Length	Rut Depth	Rut Depth	IWP	OWP	AVG.
				Average	Std.Dev.	IRI	IRI	IRI
ft.	ft.		ft.	ir	1.		in./mi.	***************************************
1+00	0	100	100	0.05	0.024	111.5	104	107.75
2+00	100	200	100	0.04	0.020	47.5	61.5	54.5
3+00	200	300	100	0.06	0.023	55	81.5	68.25
4+00	300	400	100	0.07	0.022	47.5	75.5	61.5
5+00	400	500	100	0.09	0.023	54	80.5	67.25
AVG.				0.060	0.022	63.1	80.6	71.9
STD.				0.018	0.002	27.284	15.323	20.803



APPENDIX D CONDON

Location:

Condon

Longitude:

113°44' W

Lattitude:

47°33' N

Pavement Structure

Date:

March 2002

			Thickness, i	n	
Layer#	Material Type	Before	After	Average	Commets
1	ACP	5.5	5.3	5.4	Chip Seal
2	Pulverized	8.8	9.2	9.0	
3	Base	26.8	21.5	24.1	Dark Brwn Clayey Grvl(some Wooden Frag.)
4	Subgrade	_	-	_	Brwn-Red Sandy Clay w/ Coarse & Fine Grvl

Materials Sampling

Date:

4/18/02

Material Type	Quantity	Comments	
ACP	14 cores	2-10" & 12-6" cores	
Pulverized	3 bags	1 split spoon	
Base	7 bags	3 split spoon, 1 TBD	
Subgrade	6 bags	1 split spoon	

SHRP REGION		SHRP-LTPP FIELD MATERIAL SAMPLING	STATE CODE
ITPP EXPERT	MENT C	AND FIELD TESTING ROUTE/HIGHWAY P-83 Lar on V#/ (b) After Section	SHRP ASSIGNED ID
SAMPLE/TEST	: (a) Before Servi	ROUTE/HIGHWAY P-83 Lar	ne Direction NE
, , , , , ,	. (d) perore secti	Lor V#/ (b) After Section LOG OF SHOULDER PROBE UIPMENT USED	FIELD SET NO
OPERATOR /	7° M EO	WITEMENT HORD	DCG SHEET: 08
AUGERING DA	TE 4 - 18 - 02 I	OCATION STATION: RP+3.45 (N. Em.l.) OFFSET:	SHEET NUMBER / OF
TOP OF ROCK	BASED ON:	OFFETT.	AUGER PROBE NUMBER
NOTE: SHOULI	ER AUGER PROBE IS	AN OPTIONAL ITEM, AS DIRECTE	D BY SAR.
Scale (feet)	Depth from Surface (Feet)	Material Description	Material Code
	6.25" PMS	PMS AME	Code
22	8"	Palver &C	SALIT Spoon 45 66ws
3		wood frogs	
		wood from	1 1 2 5"
4		existing BC	6.25-14.25" Somple
5			19K-23"
	Sur The Contract of the Contra	- I HIT FULL @ \$ 24"	Somple Exist
6	41"		Bose Connec
		Split Spoon brn red brn sandy cly W Line	
7		arn Sandy cly	
8	52"	The graves	21117 371011.
°		Subgrade?	30 blows 1.50
9	A 4		
	64*	Mrgen - dyban clause	
_10	H20A'+"	Argen - dhbon clayey coarse	5 ample (24"-34")
_11	9:401M		5 ample 3 4"- 52"
12	-11.5/	org bru- han sandy,	Sample 52"-64"
13		clyey gravel	100
— <u></u>	A Company of the Comp		
14		Subgrade	
100%		Characa	Sample 64° 100"
15		Coarse grovel w minor cly	
	The state of the s	dh bun	
16	16.0′		× (1)
	16.0	Finer clayey gravel	the state of the s
_17		A k h k	the attention
	X=-	Coarse gravel wilminor differ	
_18		Cly	
	/8.5'		1,
_19	19.0'	F	
20		Finer cloyen gravel	4.00
	20 FFFF (9 01)	It buff = andy clay wer /sat.	
	20 FEET (Y/N):	N DEPTH TO REFUS	AL:(FEET)
TIFIED <u>6. Zeiher</u>	»	VERIFIED AND APPROVED	MONTH-DAY-YEAR
w Chief, Co		SHPP Penrasantation	19
	-	SHRP Representative	Date

SHRP REGION	SHRF-LTPP ST	TATE CODE
STATE MT	FIELD MATERIAL SAMPLING	
LTPP EXPERIMENT		RP ASSIGNED ID
SAMPLE/TEST: (a) Before Sec	ROUTE/HIGHWAY P-83 Lane tion (b) After Section V	Direction NB
, ===== (a, ===== bec	TOC OF SHOWERED PROPERTY	#2 FIELD SET NO
OPERATOR $\mathcal{D}_{n-1}\mathcal{M}$	ENTITEMENT MADE	DCG SHEET: 08
AUGERING DATE 4 - 18 - 02	EQUIPMENT USED SH	EET NUMBER / OF /
TOP OF ROCK BASED ON:	LOCATION STATION: RP 43.45 (5. End)	AUGER PROBE NUMBER
NOTE: SHOULDER AUGER PROBE	OFFSET: feet IS AN OPTIONAL ITEM, AS DIRECTED I	from °/s
		SY SAR.
Scale Depth from (feet) Surface (Feet		Material
5.5 "	PMS	Code
2 9.0"	Pulverized BC	5 p 1; + 5 poon 2,
3 14-0"	to Book devices in the	51 618 25 15 1 50
—————————————————————————————————————	Pulverized Base Gourse	
4	Existing Bose	5.5"-14.5"
3611	the state of the s	Spir Spoon @ 2011
	dkhin wlorg cost	28 blows 1.51
6	coarse gravel w/ sandy	Sample 18"-32"
	cly fines sandy	
	Locally Very coorse	Sample 20"-32"
8	grave 1 > 1.5-2.0 "	Spli- Spoon @ 32"
		26 BIEWS 1.5° NS
V		
~ 11:30 AM		32"-50 ci
11		Somple
		50"-85"
12		
		
	The literature transfer of the literature of the	
14		- XX
	gravel	
15	gravel	
		and the second s
16		***
17		
		**
18	Δ.	*****
-1°	1	- ** **
19	dam en les cont	+
	damp-wer sticky Tan	
20	Place ic clay of inegrand	
REFUSAL WITHIN 20 FEET (Y/N):	N DEPTH TO REFUSAL:	(FEET)
CERTIFIED	VERIFIED AND APPROVED	MONTH-DAY-YEAR
G. Zeihen		19
Crew Chief, Contractor	SHRP Representative	Date
Affiliation: MDT	Affiliation:	

SHRP-LTPP

Project No		Cont	rol No. 86	3 .2.1
Project Name RESEARCH	PROI	St	a. : CONE	NO W
Core Log. No. CL-3-19-	02	Hol	e No. 1	
Driller MAYBERRY	Crew Joh.	w. Sa.	Centark I	77.471
Date 4/18/02 Drill Since	o e	he l hua	" -	
Drilling Method - Augers &	3'' Casi	na	/Size	Samples
Elev Water	Level		Pine Installa	
			ape installe	
Comments:				
2020222222222222222222222	========	******		
0.0 ASPHALT 06.	SPT/SI	HELBYS	PSI	1 2222
0.6- DRK BR	0.6 -		55	RATE
GRAVEL - SANDY		BAL	3	
_6 RNUEL 20.0	2.4.		SC	
BoH		BAG		
	42			
	55			
		BAL		
	Drille		20	
	- 1	<u> </u>	1	
	1		700 SX	MALK
				-
	-			

Project No	Contr			
Project Name <u>RESEARCH</u>	•) N)	Whaten.
Core Log. No. <u>CL-3-20-02</u>				
Oriller MAYBERRY Cr	ew_10hw-54~	_ Geotech <u>lu</u>	ING ON	****
Date 4 1/8/02 Drill Simco	Shelbys	# Bag	Samples	
Orilling Method - Augers θ''	Casing	_/Size	Bit F6 C	
Clev Water Lev				
:=====================================			=======================================	:==
				Maraja.
				-
0.0- Aspital 15.5				==
	I ADM (ATTOT DAYA			
\ .	SPT/SHELBYS	PSI	RATE	-
DK BROWN SANDY	05-20	SS	RATE	- -
DX BROWN SAWDY GRAVEL	0.5 - 2.0	SS	RATE	-
DK BROWN SANDY GRAVEL 20.0	05-20 14" BAL 14" 32"		RATE	- - -
DX BROWN SAWDY GRAVEL	05-20 14" BAL 14" 32" 32" BAG	\$\$ \$\$	RATE	-
DK BROWN SANDY GRAVEL 20.0	05-20 14" BAL 14" 32" 32" BAG 28"-36"	SS	RATE	
DK BROWN SANDY GRAVEL 20.0	0.5 - 2.0 14" BAL 14" 32" 32" BAL 28" - 36" 50" BAL	\$\$ \$\$	RATE	-
DK BROWN SAWDY GRAVEL 20.0	05-20 14" BAL 14" 32" 32" BAG 28"-36"	\$\$ \$\$	RATE	-
DK BROWN SAWDY GRAVEL 20.0	0.5 - 2.0 14" BAL 14" 32" 32" BAL 28" - 36" 50" BAL	\$\$ \$\$ \$\$		
DK BROWN SAWDY GRAVEL 20.0	0.5 - 2.0 14" BAL 14" 32" 32" BAG 50" BAG 86" - 36"	\$\$ \$\$ \$\$		
DK BROWN SAWDY GRAVEL 20.0	0.5 - 2.0 14" BAL 14" 32" 32" BAG 50" BAG 86" - 36"	\$\$ \$\$ \$\$		-
DK BROWN SAWDY GRAVEL 20.0	0.5 - 2.0 14" BAL 14" 32" 32" BAG 50" BAG 86" - 36"	\$\$ \$\$ \$\$		
DK BROWN SAWDY GRAVEL 20.0 BOH	0.5 - 2.0 14" BAL 14" 32" 32" BAG 50" BAG 86" - 36"	\$\$ \$\$ \$\$		
DK BROWN SAWDY GRAVEL 20.0	0.5 - 2.0 14" BAL 14" 32" 32" BAG 50" BAG 86" - 36"	\$\$ \$\$ \$\$		-

Location: Condon Longitude: 113°44' W Lattitude: 47°33' N

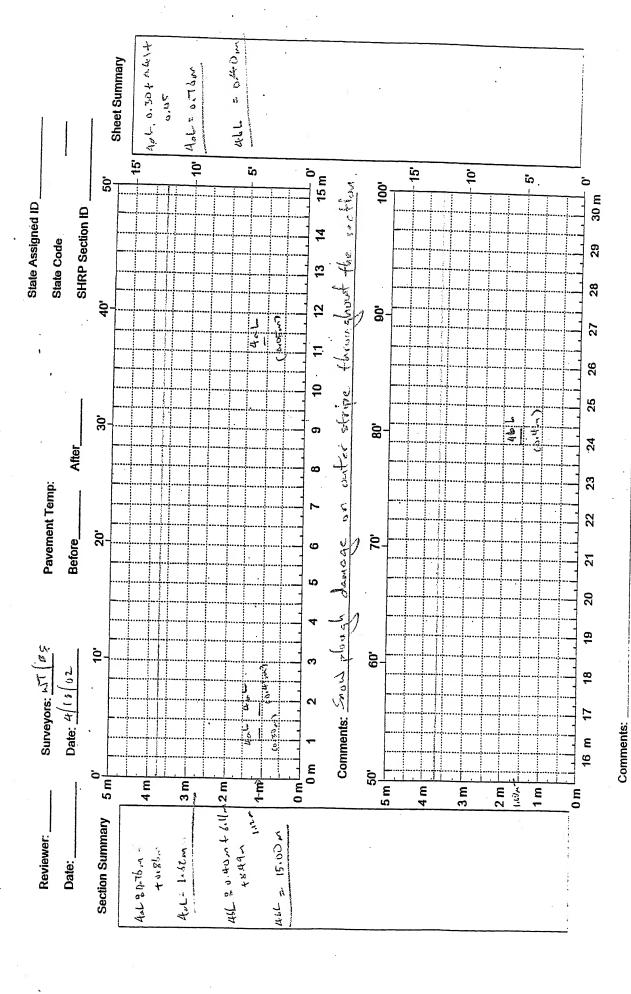
SHEET 1: DISTRESS SURVEY

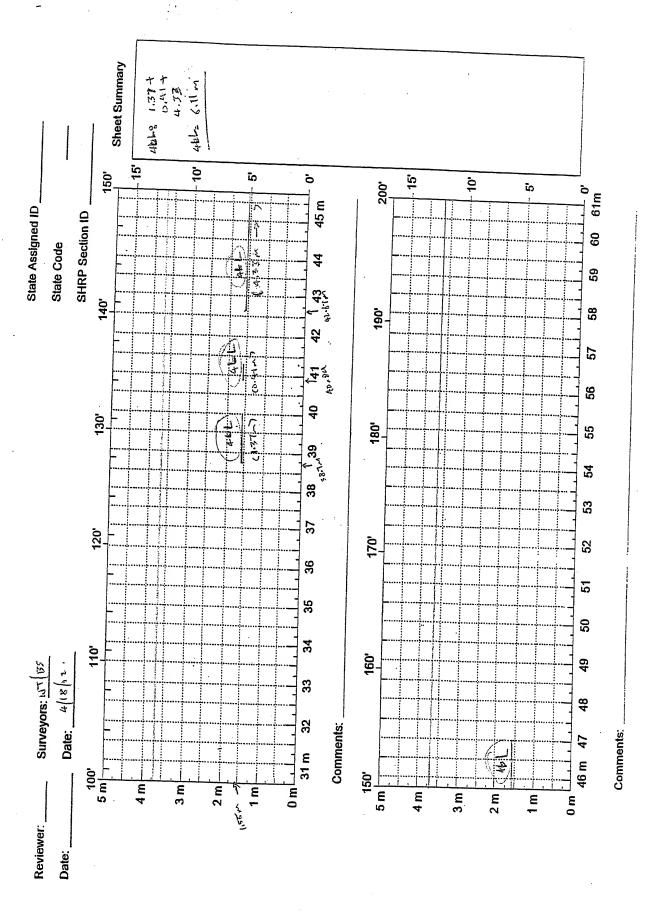
DATE OF D	DISTRESS SURVEY (MONTH/DAY/YEAR R 1: WT	SURVEYOR	<u>-</u> 2:	4/18/02 BS			
		SEVERITY LEV					
DISTRESS TYPE		LOW	MODERATE	HIGH			
CRACKING	à						
1	FATIGUE CRACKING (SQUARE METERS)	0.0	0.0	0.0			
2	BLOCK CRACKING (SQUARE METERS)	0.0	0.0	0.0			
3	EDGE CRACKING (METERS)	0.0	0.0	0.0			
4	LONGITUDINAL CRACKING						
	4a. Wheelpath (Meters)	1.6	0.0	0.0			
	Length Sealed (Meters)	0.0	0.0	0.0			
	4b. Non-Wheelpath (Meters)	15.0		0.0			
	Length Sealed (Meters)	0.0	0.0	0.0			
5	REFLECTION CRACKING AT JOINTS	Not Recorded	I				
6	TRANSVERSE CRACKING						
	Number of Cracks	0		0			
	Length (Meters)	0.0	 	0.0			
	Length Sealed	0.0	0.0	0.0			
PATCHING AND POTHOLES							
7	PATCH / PATCH DETERIORATION (Number) (Square Meters)	0.0		0.0			
8	Potholes (Number) (Square Meters)	0.0	 	0.0			

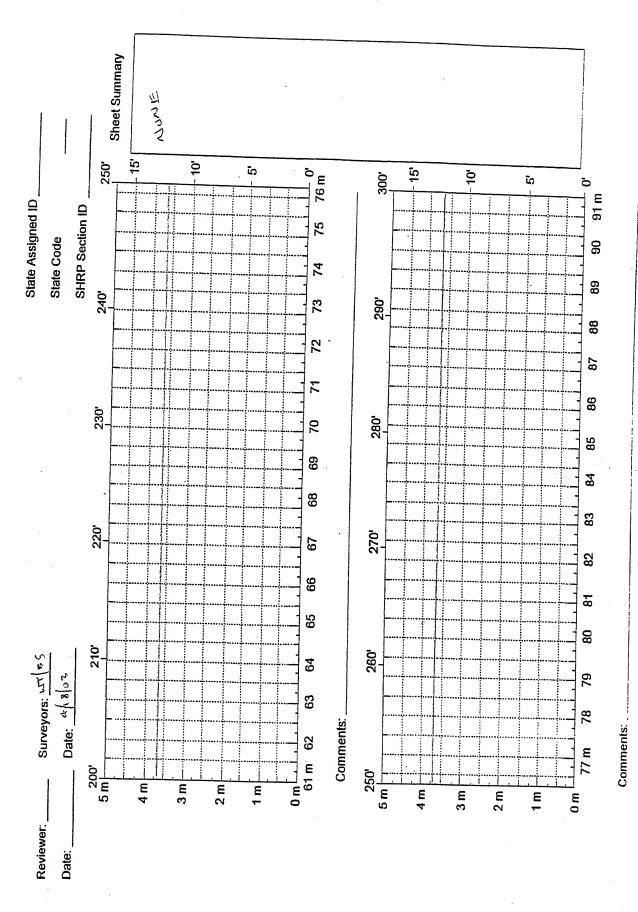
Location: Condon
Longitude: 113°44' W
Lattitude: 47°33' N

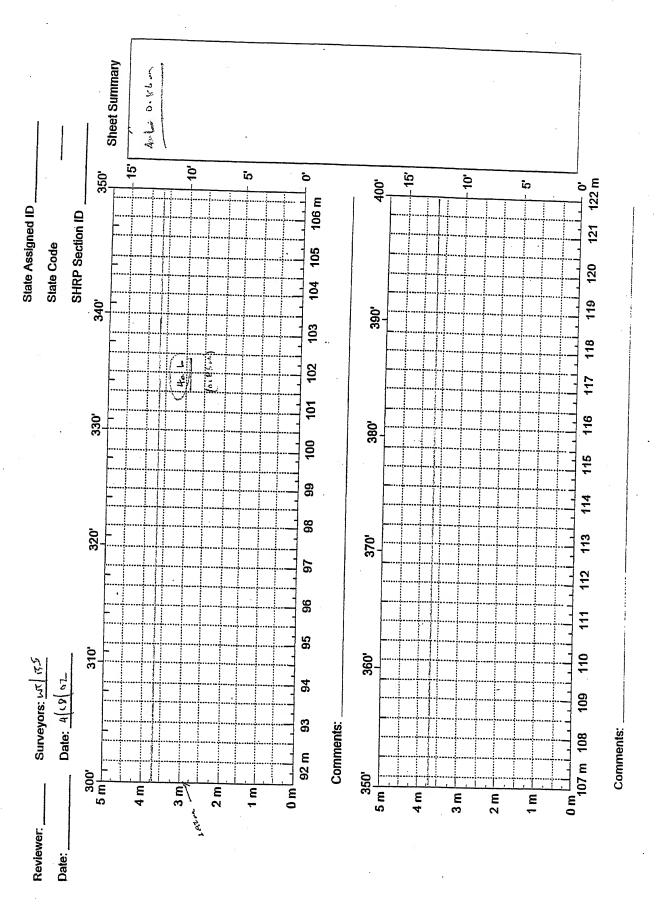
SHEET 2: DISTRESS SURVEY

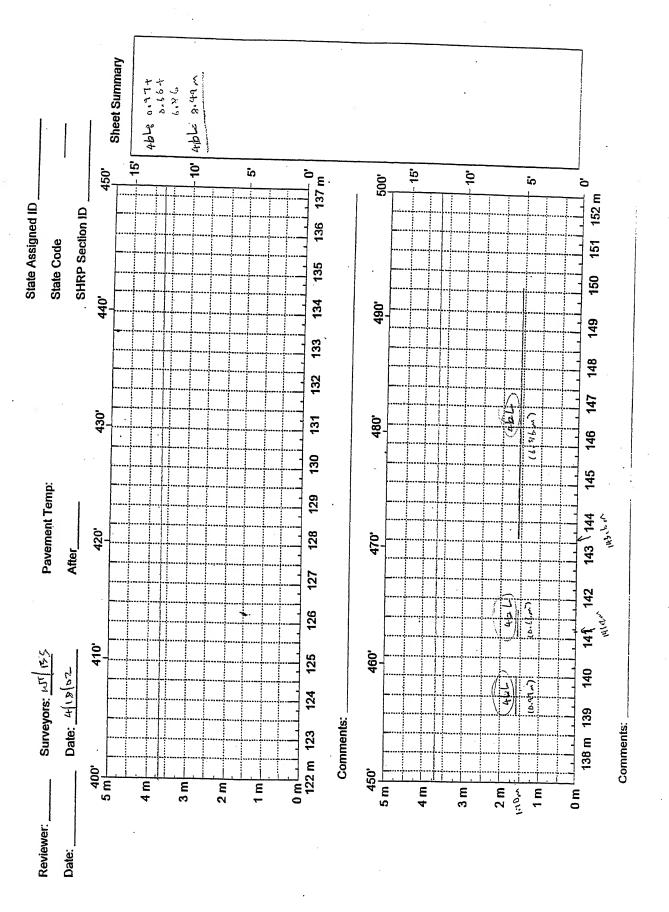
DATE C	OF DISTRESS SURVEY (MONTH/D	DAY/YEAR)	4/18/02
SURVE	YOR 1: WT	SURVEYOR 2:	BS
		OEVEDITY I EVEL	
DISTRE	ESS TYPE	SEVERITY LEVEL N/A	
DISTITL	100 111 E	IN/A	
SURFA	CE DEFORMATION		
9	RUTTING - REFER TO PROF	ILE DATA	
10	SHOVING (Number) (Square Meters)		0.0
SURFA	CE DEFECTS		
11	BLEEDING (Square Meters)		0.0
12	POLISHED AGGREGATE (Square Meters)		0.0
13	RAVELING (Square Meters)		0.0
MISCEL	LLANEOUS DISTRESSES		
14	LANE-TO-SHOULDER DROP	OFF - Not Recorded	
15	WATER BLEEDING AND PUN (Number) Length of Affected Pavement (Meters)	<i>I</i> IPING	0.0
16	OTHER (Describe) section	ow plough damage on shoulder st	ripe throughout











Location: Condon
Longitude: 113°44' W
Lattitude: 47°33' N

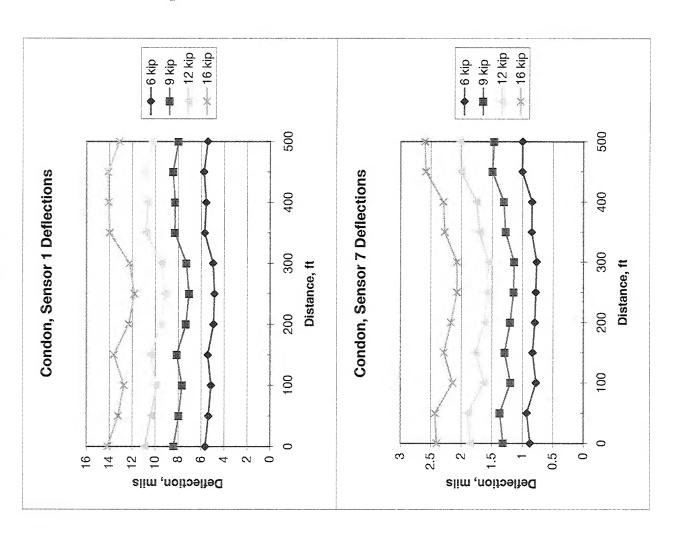
FWD Data

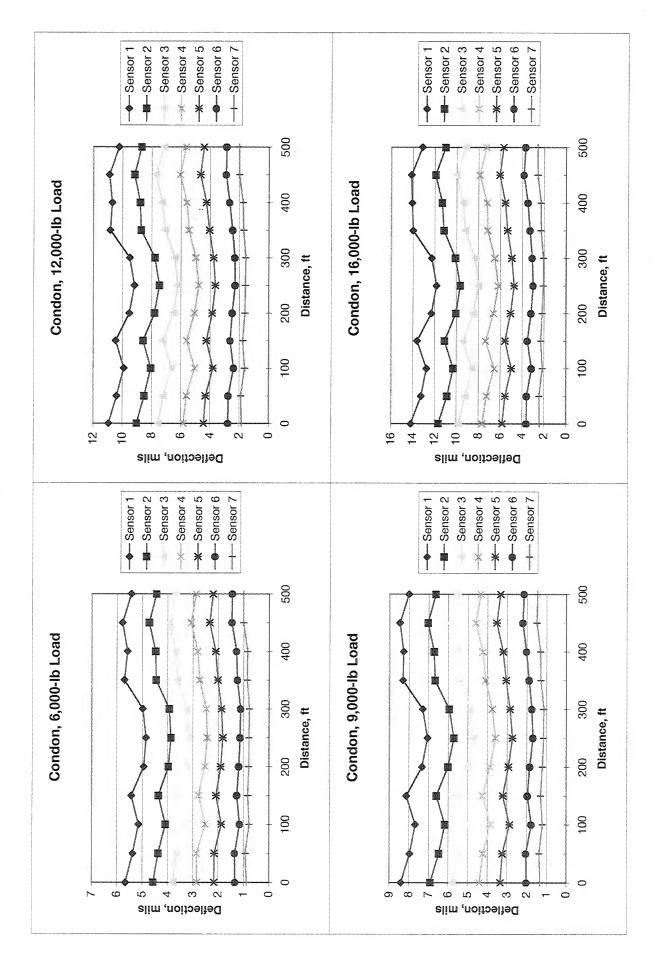
Test Date: ____10/8/01

Layer	Material	Average
	Туре	Thickness
		in.
1	ACP	5.4
2	Pulverized	9.0
3	Base	24.1
4	Subgrade	_

Station	Load	Deflection 1	Deflection 2	Deflection 3	Deflection 4	Deflection 5	Deflection 6	Deflection 7
ft	kips	mils						
0+00	6.92	6.52	5.26	4.36	3.28	2.49	1.53	1.01
0+00	9.77	9.11	7.49	6.27	4.77	3.62	2.19	1.43
0+00	12.33	11.21	9.25	7.74	5.97	4.54	2.84	1.90
0+00	15.51	13.72	11.28	9.49	7.40	5.62	3.48	2.33
0+50	6.87	6.14	4.99	4.17	3.26	2.46	1.54	1.06
0+50	9.74	8.60	7.00	5.91	4.56	3.50	2.21	1.48
0+50	12.13	10.48	8.58	7.26	5.66	4.34	2.77	1.91
0+50	15.50	12.81	10.50	8.90	7.00	5.36	3.46	2.35
1+00	6.87	5.88	4.67	3.84	2.87	2.14	1.32	0.89
1+00	9.63	8.20	6.58	5.42	4.11	3.07	1.89	1.28
1+00	12.24	10.07	8.20	6.74	5.15	3.87	2.43	1.66
1+00	15.55	12.37	9.99	8.31	6.34	4.83	3.04	2.08
1+50	6.84	6.18	4.96	4.13	3.16	2.37	1.44	0.95
1+50	9.70	8.75	7.10	5.96	4.58	3.46	2.11	1.39
1+50	12.18	10.59	8.69	7.33	5.67	4.30	2.66	1.79
1+50	15.56	13.22	10.77	9.12	7.11	5.40	3.41	2.22
2+00	6.79	5.58	4.48	3.71	2.86	2.15	1.34	0.90
2+00	9.60	7.81	6.40	5.34	4.11	3.12	1.97	1.28
2+00	12.16	9.63	7.89	6.58	5.13	3.90	2.51	1.64
2+00	15.51	11.92	9.74	8.20	6.41	4.90	3.09	2.10
2+50	6.83	5.51	4.39	3.60	2.76	2.06	1.29	0.89
2+50	9.75	7.63	6.17	5.09	3.88	2.95	1.83	1.24
2+50	12.15	9.28	7.55	6.27	4.82	3.68	2.31	1.60
2+50	15.53	11.47	9.35	7.74	6.00	4.59	2.91	2.01

Station	Load	Deflection 1	Deflection 2	Deflection 3	Deflection 4	Deflection 5	Deflection 6	Deflection 7
ft	kips	mils						
3+00	6.72	5.56	4.40	3.63	2.76	2.09	1.25	0.86
3+00	9.59	7.76	6.32	5.19	3.99	3.03	1.86	1.21
3+00	12.08	9.54	7.82	6.44	5.00	3.78	2.32	1.57
3+00	15.37	11.76	9.69	7.95	6.24	4.74	2.97	1.99
3+50	6.78	6.43	5.02	4.06	3.08	2.27	1.40	0.96
3+50	9.66	8.90	7.15	5.76	4.38	3.27	2.02	1.37
¨3+50	12.19	10.98	8.84	7.18	5.52	4.11	2.50	1.73
3+50	15.35	13.40	10.69	8.83	6.84	5.11	3.16	2.18
4+00	6.75	6.27	5.03	4.15	3.16	2.36	1.44	0.95
4+00	9.59	8.81	7.15	5.90	4.51	3.41	2.15	1.39
4+00	12.07	10.74	8.82	7.32	5.61	4.27	2.68	1.76
4+00	15.42	13.54	10.89	9.04	6.93	5.33	3.35	2.21
4+50	6.70	6.44	5.27	4.38	3.43	2.61	1.63	1.12
4+50	9.54	8.96	7.45	6.25	4.86	3.74	2.34	1.58
4+50	12.21	11.06	9.31	7.83	6.14	4.73	2.96	2.04
4+50	15.25	13.45	11.36	9.51	7.49	5.76	3.66	2.46
5+00	6.83	6.18	5.05	4.18	3.27	2.51	1.65	1.14
5+00	9.64	8.57	7.10	5.90	4.64	3.58	2.30	1.57
5+00	12.15	10.34	8.78	7.22	5.69	4.47	2.91	2.04
5+00	15.46	12.68	10.63	8.85	7.01	5.50	3.58	2.51





Location:

Condon 113°44' W

Longitude: Lattitude:

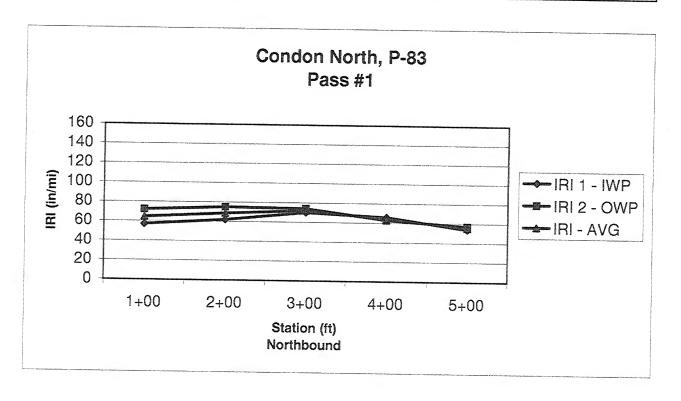
47°33' N

Profile Data

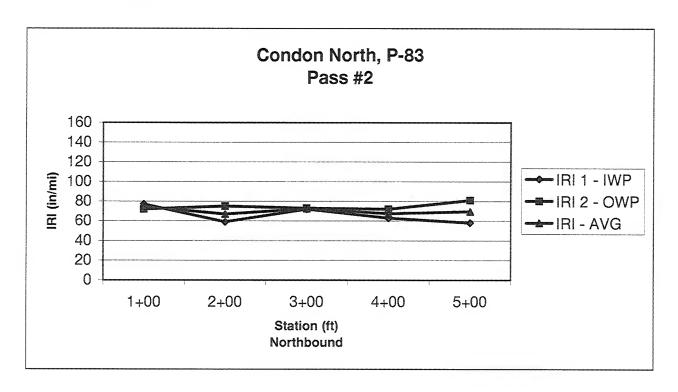
Test Date:

10/15/01

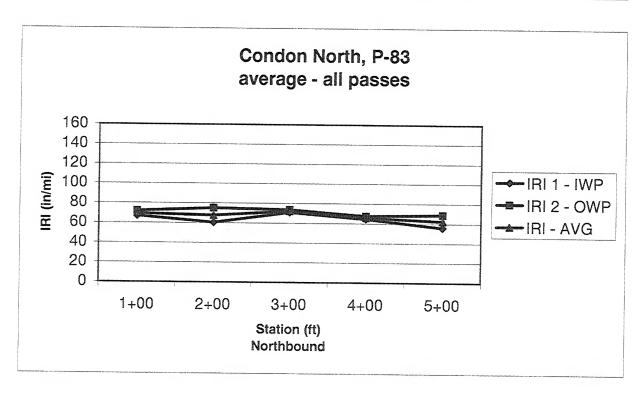
Station	From	т	1			Y		
Glation	FIUIII	То	Length	Rut Depth	Rut Depth	IWP	OWP	AVG.
				Average	Std.Dev.	IRI	IRI	IRI
ft.	ft		ft.	ir	١.		in./mi.	
1+00	0	100	100	0.18	0.020	57	72	65
2+00	100	200	100	0.16	0.021	62	75	69
3+00	200	300	100	0.16	0.025	70		
4+00	300	400	100	0.20	0.023	66		
5+00	400	500	100	0.18	8		63	65
AVG.			100		0.023	54	57	56
				0.170	0.022	61.8	68.2	65.0
STD.				0.017	0.002	6.496	7.855	6.164



Station	From	То	Length	Rut Depth	Rut Depth	IWP	OWP	AVG.
				Average	Std.Dev.	IRI	IRI	IRI
ft.	f	t.	ft.	ir	า.		in./mi.	
1+00	0	100	100	0.11	0.021	77	72	75
2+00	100	200	100	0.13	0.023	59	75	67
3+00	200	300	100	0.15	0.029	72	73	73
4+00	300	400	100	0.20	0.020	63	72	68
5+00	400	500	100	0.18	0.029	58	81	70
AVG.				0.154	0.024	65.8	74.6	70.2
STD.				0.036	0.004	8.349	3.782	3.233



Station	From	То	Length	Rut Depth Average	Rut Depth Std.Dev.	IWP IRi	OWP	AVG.
ft.	ft.		££			INI	IRI	IRI
	11.		ft.	ir	1.		in./mi.	
1+00	0	100	100	0.15	0.021	67	72	70
2+00	100	200	100	0.15	0.022	61	75	68
3+00	200	300	100	0.16	0.027	71	74	72
4+00	300	400	100	0.20	0.022	65	68	66
5+00	400	500	100	0.18	0.026	56	69	63
AVG.				0.165	0.023	63.8	71.4	67.6
STD.				0.024	0.003	5.794	3.110	3.668



APPENDIX E HAMMOND

Location:

Hammond

Longitude: Lattitude: 105°09' W 45°19' N

Pavement Structure

Date:

March 2002

			Th	Thickness, in		
١	Layer#	Material Type	Before	After	Average	Commets
	1	ACP	4.7	3.1	3.9	Chip Seal
	2	CSB	5.5	7.0	6.3	
	3	Base	6.0	4.5	5.3	Orange-Brwn w/Red-Orange Flakes. Sand w/Fine Grvl.
	4	Subgrade	-	-	-	Sandy Silty Clay

Materials Sampling

Date:

4/23/02

Material Type	Quantity	Comments
ACP / CSB	14 cores	2-10" & 12-6" cores
CSB	1 bag	ACP/CSB cores
Base	1 bag	
Subgrade	4 shelby, 2bags	1 splitspoon

SHRP REGIO	אר	SHRP-LTPP	STATE CODE
	77	FIELD MATERIAL SAMPLING	
		AND FIELD TESTING	SHRP ASSIGNED ID
AMPLE/TES	T: (a) Before Secti	ROUTE/HIGHWAY $N-2$ 3 L on $V^{\pm}/$ (b) After Section	ane Direction WR
_	(=) ===================================		FIELD SET NO.
PERATOR	Dan M. EQ	LOG OF SHOULDER PROBE	DCG SHEET: 08
UGERING D.	ATE 4 - 23 - 02 I	OCATION STATION: RP95.4 (E. E.	SHEET NUMBER / OF
OP OF ROCI	K BASED ON:	OFFSET:	AUGER PROBE NUMBER
OTE: SHOU	LDER AUGER PROBE IS	AN OPTIONAL ITEM, AS DIRECT	TED BY CAR
		7	ED BI SAR.
Scale	Depth from	Material Description	Material
(feet)	Surface (Feet)	The second of th	Code
1	4.5"	PMS	
2		CTB	- A 10 Year 200
	10"		25 Hows
3	16"	Exist. Base	10" To 28"
		org Arn wheel org fla	Kes Split spoon
4	- .	sand withing growel	nes Some
			Sample 4.5 2 1011
5		grygrn sandy silty cly	
		1	Conference
6		More clayey	Sample 16"- 19 4
		cloded	
. 7		and more plastic w/de	2 SHELBY
	±,,		or h (19"-4]
88			2 SHELBY (15.25")
		Gry 9 had 1 de	2 SHELBY (
9	•	gra gra highly plass	(3:-67)
	·*·	Cly	
10		. (Recovered (15.25 u)
		/ ·	:
11			
_12	·	`	
13		· .	
		: + †.	e established type at
14	1		
15			
-	St. Co. West of the state of th		
16		1	
		•	•**
17			
-		1.	
18		\	
19			
		!	
20		<u>.</u>	·

		Y -		
REFUSAL WITHIN 20 FEET (Y/N):	<u> </u>	DEPTH TO	REFUSAL:	(FEET)
CERTIFIED <u>G. Zeihen</u>	VERIFIED AND	APPROVED		MONTH-DAY-YEAR19
Crew Chief, Contractor Affiliation: MD7	SHRP Representa	ative		Date

SHRP REGION		SHRP-LTPP	STATE CODE
STATE MF		FIELD MATERIAL SAMPLING AND FIELD TESTING	CUDD ACCTONING
LTPP EXPERIMEN	IT Hammond NW]	ROTTE /HTGHUAV Av - 22	SHRP ASSIGNED ID
		LOG OF SHOULDER PROBE JIPMENT USED	V #2 FIELD SET NO.
OPERATOR Dan	M. EQU	JIPMENT USED	DCG SHEET: 08
AUGERING DATE	4-23-02 I	CATION STATION: RP 95.4 (W. F.	AUGED PROPE MINER
TOP OF ROCK BA	SED ON:	JIPMENT USED OCATION STATION: R P 95.4 (W. E.A. OFFSET: fo	est from %/c
NOTE: SHOULDER	AUGER PROBE IS	AN OPTIONAL ITEM, AS DIRECTE	ED BY SAR.
Scale (feet)	Depth from Surface (Feet)	Material Description	Material
11_	7 3 "	PMS	Code
	10"	The state of the s	
3	A A	THE REPORT OF THE PARTY OF	
	14.5" 4.5" V	existing base	Sample 10"-14.5"
4		Ithrn fine sand Subgrad	e SHELL
5	38.5"	increly	SHELBY THRE (A.5-38.5")
	62.5"	grygrn sondy siligaly	Ra. 38.5
		son dy silijely	Recovery (16.5°)
7	174:	grygne srift	THELBY TUBE
		highly plasticely	(38.50- 62.57)
8		3	
9	1	•	Recovery (12)
10		The second secon	Charles (12)
			4
11			-22-
12		-	*
13		9 00 000 600 6	
		grygna sand inc cl	a)
14		gry gra stiff plass	Tir.
15	- /	cly	
	, _{See} to a	the second secon	
16			
17			
18	*		
		•	**
19			
20	·		
FUSAL WITHIN 20	FEET (Y/N):	DEPTH TO REFUS	SAL:(FEET)
RTIFIED		VERIFIED AND APPROVED	MONTH - DAY - YEAR
G.Zeihen	·		19
ew Chief, Contr	actor	RP Representative	Date

48" 60" 72"

Project No. 8021	Contr	ol No	
Project Name RESERCA Pe	O j Sta	.: 1104 m	me ob
Core Log. No. <u>CL-3-21-62</u>		•	
Driller MAYSERRY Cre	EW JOHN SAM	Geotech_6	REG/WINGO
Date 4 3 02 Drill 5:00	Shelbys &	# Bag	Samples
Drilling Method - Augers 8.	, Casing	/Size	/Bit FLR
Elev Water Lev			
Comments:			
Comments:			
323333			
O.O. ASPHALL O.6	237503225252525	********	
CEMENT BABE DID"	SPT/SHELBYS	PSI	RATE
Lt Beown Sinty	19" SHELB	A 3,	me?
FINE SAND 40	43" SHEL		67"
BROWN CLAY W/S	DRILLED TO		(e /
FINE SAND	3100 222 0 10	No SAN	
·20.0 BOH	_	100 SAV	
2.			
)			
•			

.

Project No. 8021	Contro	ol No		_		
Project Name RESEARCH PR	Sta.	: HAMON	מ	_		
Core Log. No. CL-3-22-C) Q Hole	No. <u>2</u>		_		
Driller MAYSERRY Cre	w John- SAM	Geotech <u>& R</u>	es d wine o	ಸ		
Date 4 23 02 Drill 5:mco	Shelbys 2	# Bag	Samples	_		
Drilling Method - Augers $oldsymbol{\mathcal{B}}^{lpha}$	Casing	/Size	/Bit FGR	_		
Elev Water Lev						
		**********	=======================================	±		
Comments:				_		
				<u>.</u>		
				-		
				-		
4		=======================================		1		
0.0 ASPHALY 0.3		PSI	RATE	∞ I		
CEMENT BASE 0.7		SHEFRA		i		
BROWN FINE SANDY	38"- 62"	SHETBA		ı		
S: Lt 40. BROWN	DrillED TO	20,0				
FINE SANY PLAY	No	SAMA				
20.0 - BOA		·				
	4					•
(·				
			(1)			
•			٠.		•	
	-					
			•			
					•	
		 				
•	•					
			•			

Location: Hammond
Longitude: 105°09' W
Lattitude: 45°19' N

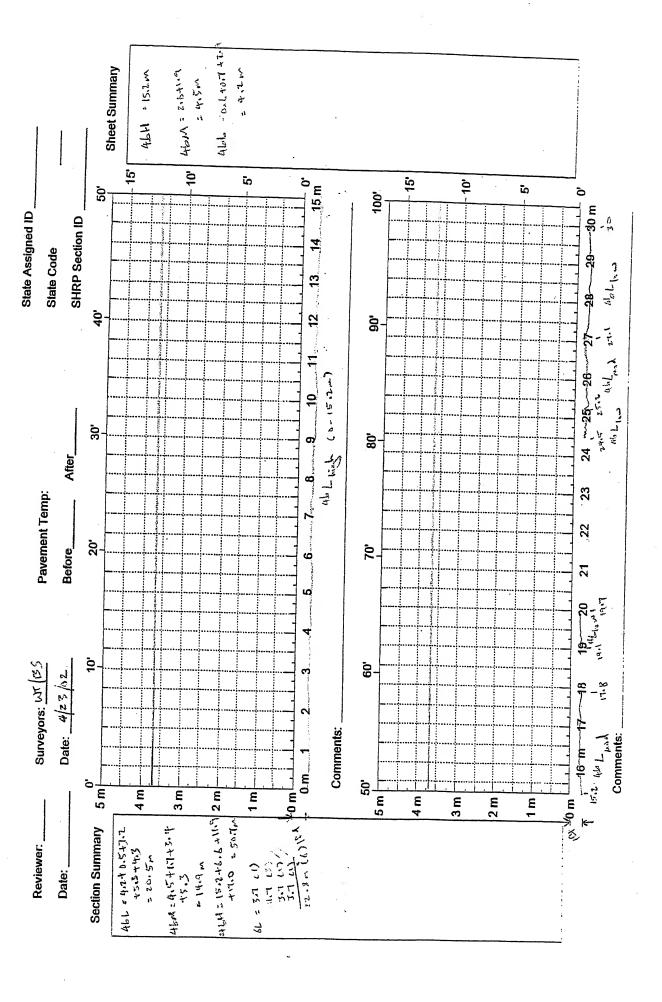
SHEET 1: DISTRESS SURVEY

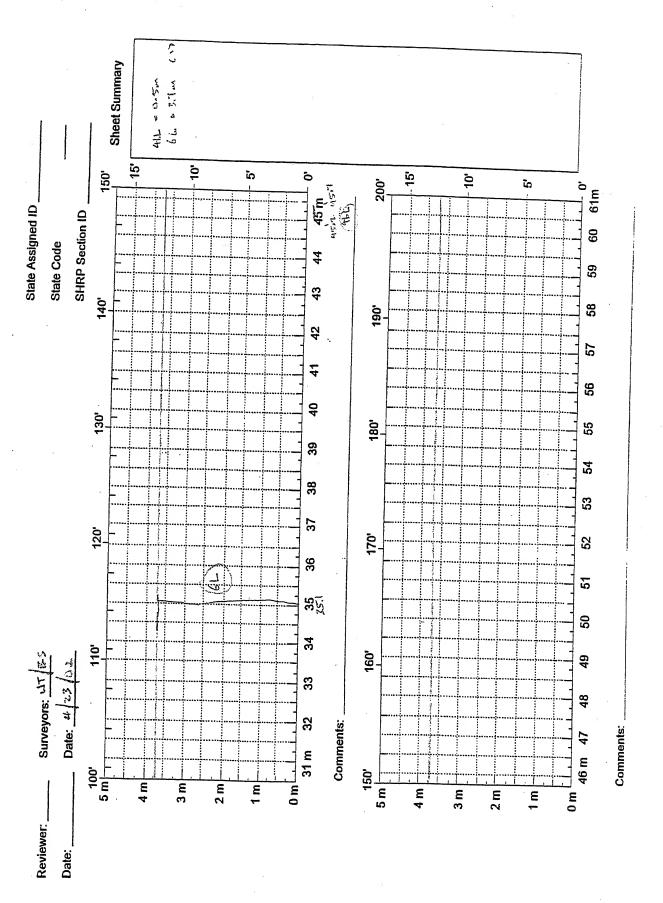
DATE OF I	DISTRESS SURVEY (MONTH/DAY/YEAR PR 1: WT	•) SURVEYOR 2:			
		SEVERITY LEV	EL			
DISTRESS		LOW	MODERATE	HIGH		
CRACKING	G					
1	FATIGUE CRACKING (SQUARE METERS)	0.0	0.0	0.0		
2	BLOCK CRACKING (SQUARE METERS)	0.0	0.0	0.0		
3	EDGE CRACKING (METERS)	0.0	0.0	0.0		
4	LONGITUDINAL CRACKING					
	4a. Wheelpath (Meters) Length Sealed (Meters)	0.0	 	0.0		
	4b. Non-Wheelpath (Meters) Length Sealed (Meters)	20.5	 	50.7 0.0		
5	REFLECTION CRACKING AT JOINTS	Not Recorded	I			
6	TRANSVERSE CRACKING Number of Cracks Length (Meters) Length Sealed	6 22.8 0.0	0.0	0 0.0 0.0		
PATCHING	AND POTHOLES					
7	PATCH / PATCH DETERIORATION (Number) (Square Meters)	0.0	0.0	0.0		
8	Potholes (Number) (Square Meters)	0.0		0.0		

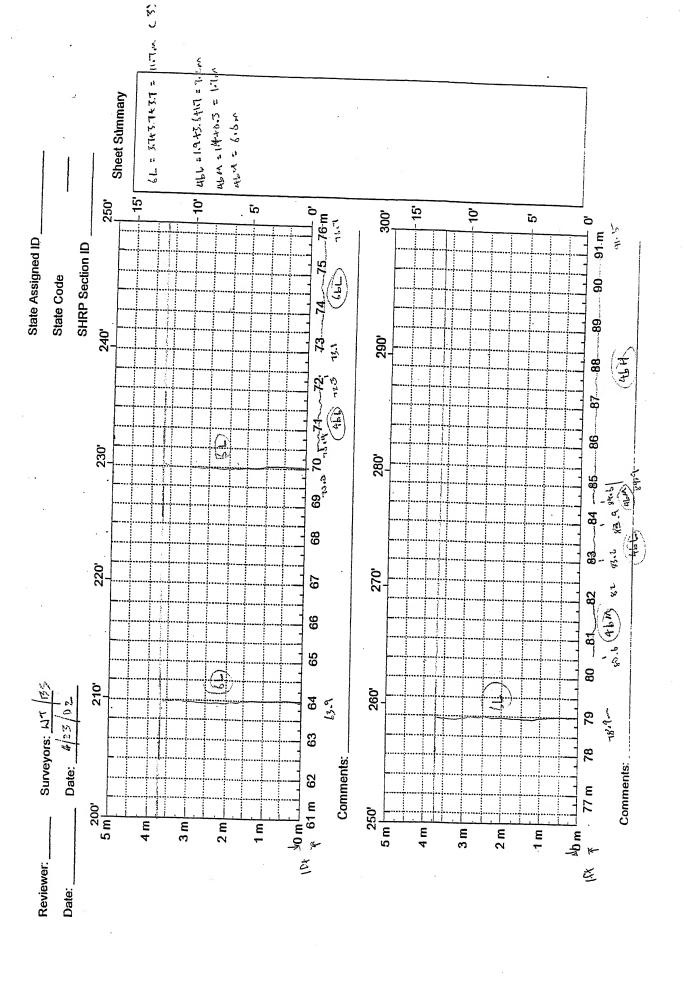
Location: Hammond
Longitude: 105°09' W
Lattitude: 45°19' N

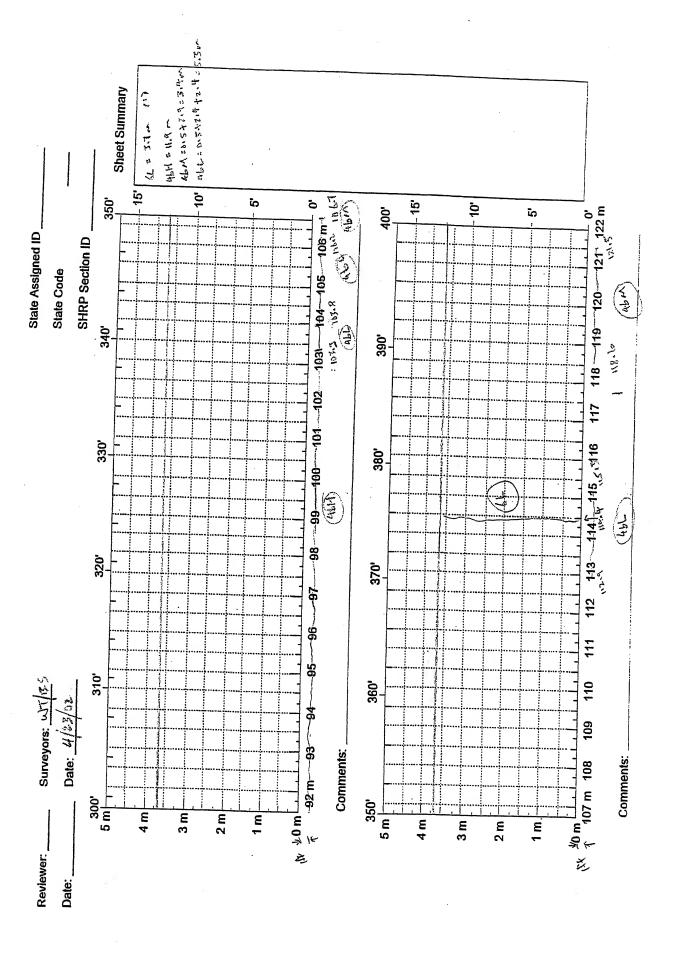
SHEET 2: DISTRESS SURVEY

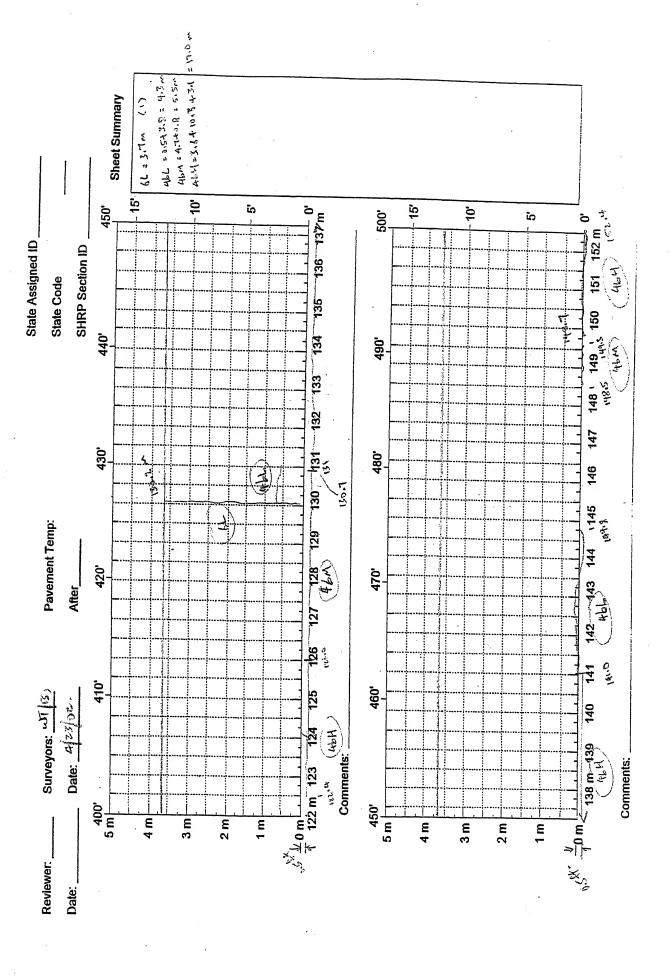
DATE OF D	ISTRESS SURVEY (MONTH	I/DAY/YEAR)		4/23/02
SURVEYOR	R 1: WT		SURVEYOR 2:	BS
		QE.	VERITY LEVEL	
DISTRESS	TYPE	35	N/A	
	··· —			
SURFACE	DEFORMATION			
9	RUTTING - REFER TO PRO	OFILE DATA		
10	SHOVING (Number) (Square Meters)			0.0
SURFACE	DEFECTS			
11	BLEEDING (Square Meters)			0.0
12	POLISHED AGGREGATE (Square Meters)			0.0
13	RAVELING (Square Meters)			0.0
MISCELLA	NEOUS DISTRESSES			
14	LANE-TO-SHOULDER DRO	POFF - Not Re	ecorded	
15	WATER BLEEDING AND PU (Number) Length of Affected Pavemen (Meters)			0.0
16	OTHER (Describe) 1 cement but cracks are now v		cks were sealed with s	ome asphalt











Location: Hammond
Longitude: 105°09' W
Lattitude: 45°19' N

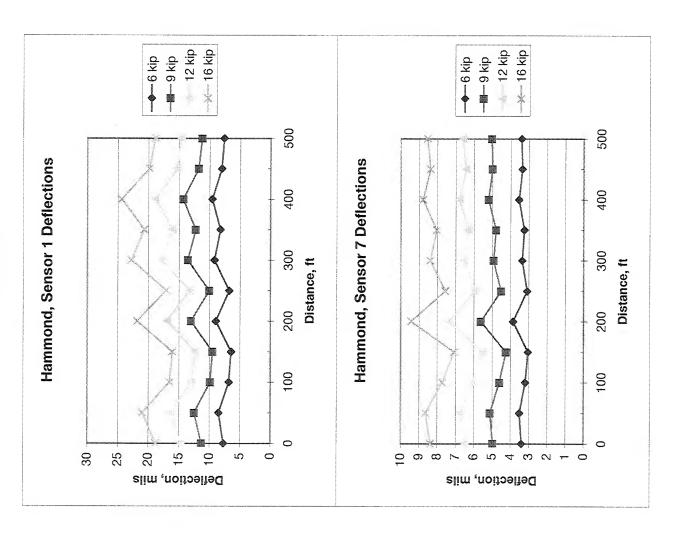
FWD Data

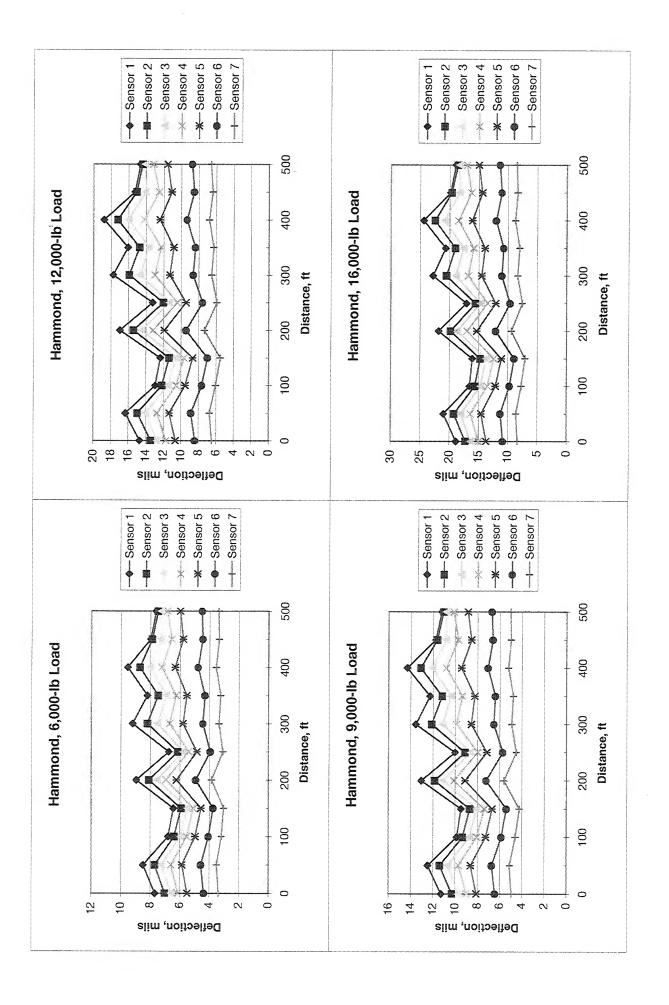
Test Date: ____10/9/01

Layer	Material	Average
	Type	Thickness
		in.
1	ACP	3.9
2	CSB	6.3
3	Base	5.3
4	Subgrade	_

Station	Load	Deflection 1	Deflection 2	Deflection 3	Deflection 4	Deflection 5	Deflection 6	Deflection 7
ft	kips	mils						
0+00	6.80	8.71	7.95	7.45	6.95	6.23	4.95	3.84
0+00	9.31	11.67	10.66	10.06	9.29	8.37	6.65	5.12
0+00	11.63	14.24	13.02	12.33	11.33	10.28	8.14	6.29
0+00	14.85	17.49	16.01	15.20	13.94	12.69	10.07	7.77
0+50	6.72	9.49	8.62	8.08	7.37	6.55	5.11	3.93
0+50	9.20	12.75	11.65	10.90	9.91	8.80	6.86	5.22
0+50	11.52	15.66	14.35	13.45	12.21	10.87	8.48	6.47
0+50	14.74	19.35	17.70	16.58	15.05	13.40	10.39	7.95
1+00	6.75	7.64	7.18	6.71	6.21	5.58	4.56	3.58
1+00	9.28	10.18	9.63	8.98	8.30	7.48	6.04	4.74
1+00	11.67	12.57	11.85	11.14	10.24	9.26	7.42	5.88
1+00	15.02	15.52	14.68	13.76	12.67	11.39	9.15	7.24
1+50	6.69	7.17	6.59	6.12	5.67	5.09	4.17	3.38
1+50	9.22	9.70	8.91	8.26	7.55	6.83	5.53	4.34
1+50	11.61	11.96	10.99	10.22	9.35	8.38	6.75	5.34
1+50	14.98	15.05	13.78	12.80	11.65	10.41	8.37	6.63
2+00	6.68	9.95	9.01	8.40	7.72	6.93	5.48	4.29
2+00	9.16	13.27	12.07	11.28	10.29	9.27	7.35	5.71
2+00	11.55	16.34	14.84	13.94	12.69	11.45	9.07	7.06
2+00	14.65	20.00	18.14	17.08	15.53	14.01	11.09	8.63
2+50	6.74	7.58	6.91	6.50	6.06	5.44	4.42	3.47
2+50	9.20	10.25	9.33	8.81	8.14	7.32	5.86	4.61
2+50	11.56	12.75	11.59	10.95	10.05	9.09	7.27	5.71
2+50	14.92	15.94	14.50	13.72	12.57	11.28	9.00	7.05

Station	Load	Deflection 1	Deflection 2	Deflection 3	Deflection 4	Deflection 5	Deflection 6	Doffaction
ft	kips	mils	mils	mils	mils		i .	1
3+00	6.67	10.22	9.12	8.35	7.43	mils	mils	mils
3+00	9.11	13.71	12.28	11.26		6.43	4.94	3.73
3+00	11.47	16.97	15.21		9.99	8.66	6.61	4.98
3+00	14.67	20.89		14.00	12.41	10.79	8.25	6.23
3+50	6.68	9.13	18.82	17.32	15.39	13.30	10.15	7.68
3+50	9.16	12.49	8.32	7.69	6.96	6.15	4.80	3.61
3+50	11.50		11.39	10.56	9.53	8.40	6.51	4.87
3+50	14.81	15.40	14.14	13.10	11.78	10.39	8.04	6.03
4+00	6.62	19.14	17.60	16.29	14.68	12.92	9.96	7.43
4+00	9.10	10.52	9.61	8.86	7.98	6.97	5.26	3.91
4+00		14.48	13.24	12.20	10.93	9.55	7.14	5.26
4+00	11.41	17.87	16.38	15.20	13.50	11.81	8.87	6.46
4+50	14.67	22.38	20.60	19.07	16.91	14.77	11.04	8.05
	6.63	8.83	8.70	8.04	7.25	6.40	4.93	3.71
4+50	9.12	11.92	11.80	10.94	9.87	8.67	6.72	5.05
4+50	11.49	14.63	14.44	13.45	11.99	10.61	8.16	6.15
4+50	14.70	18.24	18.05	16.80	14.95	13.25	10.19	7.70
5+00	6.70	8.51	8.36	8.14	7.65	6.68	5.04	3.80
5+00	9.16	11.43	11.28	11.04	10.31	9.03	6.83	5.12
5+00	11.55	14.11	13.88	13.60	12.69	11.13	8.43	6.36
5+00	14.75	17.43	17.13	16.91	15.66	13.82	10.52	7.88





Location:

Hammond

Longitude:

105°09' W

Lattitude:

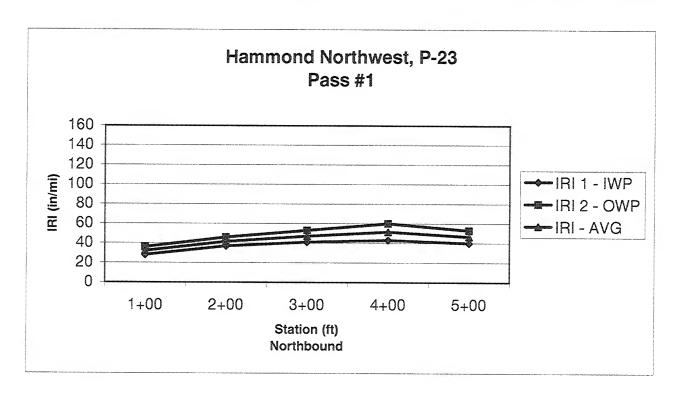
45°19' N

Profile Data

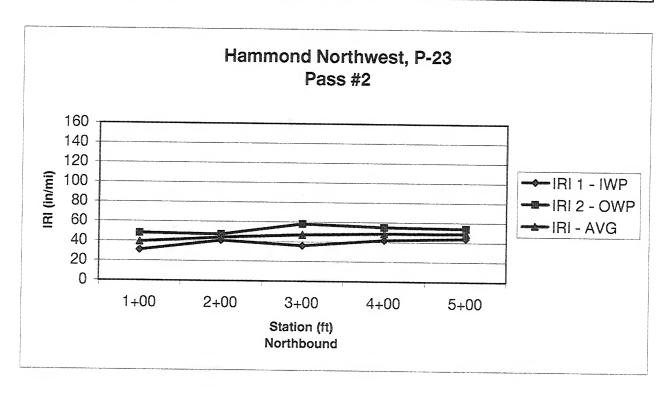
Test Date:

9/28/01

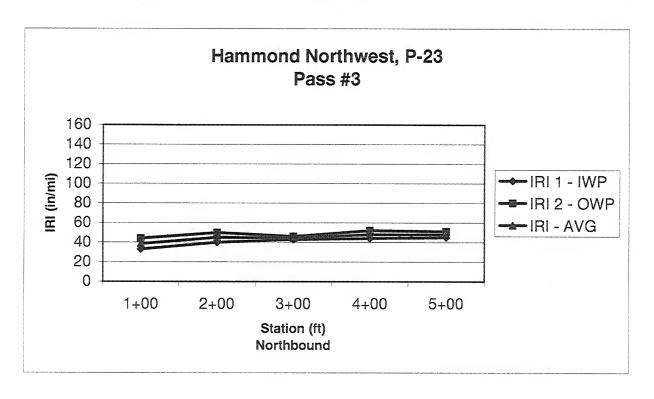
Station	From	То	Length	Rut Depth	Rut Depth	IWP	OWD	AV/0
Otation	1 10111	10	Lengui	nui Debiii	nui Depiii		OWP	AVG.
				Average	Std.Dev.	IRI	IRI	IRI
ft.	f	t.	ft.	ir	١.		in./mi.	
1+00	0	100	100	0.08	0.034	28	36	32
2+00	100	200	100	0.13	0.020	37	46	42
3+00	200	300	100	0.09	0.033	41	53	47
4+00	300	400	100	0.04	0.017	43	60	52
5+00	400	500	100	0.10	0.020	40	53	47
AVG.				0.088	0.025	37.8	49.6	43.7
STD.				0.033	0.008	5.891	9.072	7.438



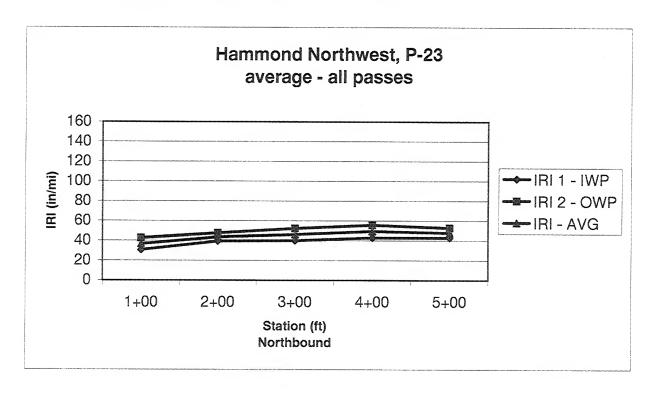
Station	From	То	Length	Rut Depth	Rut Depth	IWP	OWP	AVG.
				Average	Std.Dev.	IRI	IRI	IRI
ft.	fi		ft.	ir	ì.		in./mi.	
1+00	0	100	100	0.13	0.021	31	48	40
2+00	100	200	100	0.14	0.017	41	47	44
3+00	200	300	100	0.11	0.024	36	58	47
4+00	300	400	100	0.09	0.018	42	55	49
5+00	400	500	100	0.11	0.021	44	54	49
AVG.				0.116	0.020	38.8	52.4	45.6
STD.				0.019	0.003	5.263	4.722	3.927



Station	From	То	Length	Rut Depth	Rut Depth	IWP	OWP	AVG.
				Average	Std.Dev.	IRI	IRI	IRI
ft.	ft		ft.	ir	Դ.		in./mi.	
1+00	0	100	100	0.13	0.025	33	44	39
2+00	100	200	100	0.11	0.018	40	50	45
3+00	200	300	100	0.07	0.018	43	46	45
4+00	300	400	100	0.08	0.018	44	52	48
5+00	400	500	100	0.07	0.027	45	51	48
AVG.				0.092	0.021	41.0	48.6	44.8
STD.				0.027	0.004	4.848	3.435	3.883



Station	From	То	Length	Rut Depth	Rut Depth	IWP	OWP	AVG.
				Average	Std.Dev.	IRI	IRI	IRI
ft.	f	t.	ft.	ir	1.		in./mi.	
1+00	0	100	100	0.11	0.027	31	43	37
2+00	100	200	100	0.13	0.018	39	48	44
3+00	200	300	100	0.09	0.025	40	52	46
4+00	300	400	100	0.07	0.018	43	56	49
5+00	400	500	100	0.09	0.023	43	53	48
AVG.				0.099	0.022	39.2	50.2	44.7
STD.				0.022	0.004	5.059	5.091	4.985



APPENDIX F

WOLF POINT

Location:

Wolf Point 105°31' W

Longitude: Lattitude:

47°57' N

Pavement Structure

Date:

March 2002

		Th	ickness	, in	
Layer #	Material Type	Before	After	Average	Commets
1	ACP	3.7	3.7	3.7	Chip Seal
2	СТВ	19.8	19.8	19.8	
3	Subgrade	-	-	-	Dark Brwn-Blk Stiff Highly Plastic Clay w/ Scatt. Grvl.

Materials Sampling

Date:

4/24/02

Material Type	Quantity	Comments
ACP/CTB	14 cores	2-10" & 12-6" cores
CTB	2 bags	ACP/CTB cores
Subgrade	4 shelby, 3bags	1 TBD, 1 split spoon

SHRP REGI	ON	SHRF-LTPP	STATE CODE
STATE	MT	FIELD MATERIAL SAMPLING	
LTPP EXPE	RIMENT Wall PT 5	AND FIELD TESTING ROUTE/HIGHWAY P-25 La	SHRP ASSIGNED ID
SAMPLE/TES	ST: (a) Before Section	on $\frac{\sqrt{\#}}{\sqrt{2}}$ (b) After Section	ne Direction NB
		The Ox Saminard bonds	DCG SHEET: 08
OPERATOR_	Dan M. EQI	וויסאדאיד ווכדה	
AUGERING I	DATE 4 - 24 - 62 I	OCATION STATION: RP 37.4 G. En.	AUGER PROBE NUMBER
TOP OF ROC	CK BASED ON:	OFFSET:fe	set from °/s
NOIE: SHOU	TIMER AUGER PROBE IS	AN OPTIONAL ITEM, AS DIRECTE	ED BY SAR.
Scale	Depth from	Material Brands	· · · · · · · · · · · · · · · · · · ·
(feet)	Surface (Feet)	Material Description	Material
1	3.5"	64.0	Code
	5.0	PAIS	
2	23.5 "	CTB Y	
	23.5		Sample 3.5"
3		drann-61K Stifk	1.7 J. 10.000 A.
		highly plast cly w/	
4		scattered gravel	Shelby Tube
er i 🕞 i eren geski	The state of the s	- g-ave/	9,36
55	After the control of any state of the control of th	Subgeade /	
6			(ii · recov.)
7	.*		Shelfy Tube
		a selfer, et a set as	
8	·		47.5"- 78.5"
99			(11" Recov.)
10	0 0 0 0 0		
11			
			* **
12			
	, '		
13	· .	√ ·	
14		brn-du brn stiff hig plastic ely some grav	-731A3
		plasting,	Bhy
_15		ery some grav	20 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
16		The state of the s	
16	* .	•	
17			
18	4	•	
			1000
19			(t n -
20	D- Th	•	the second of
	Dry To T.D.		
FUSAL WITH	IIN 20 FEET (Y/N):	N DEPTH TO REFUS	SAL:(FEET)
RTIFIED		VERIFIED AND APPROVED	MONTH-DAY-YEAR
G. Zei		UDB Boomson bed	19
-w 1.17197	LUDGETSGEGE (T - h -

Dry To T.D.		
REFUSAL WITHIN 20 FEET (Y/N)	VERIFIED AND APPROVED VERIFIED AND APPROVED MONTH-DAY-YEAR - 19 Ontractor SHRP Representative Date	
CERTIFIED G. Zeihen	VERIFIED AND APPROVED	
Crew Chief, Contractor Affiliation: /9 0 T		Date

SHRP REGION	SHRP-LTPP	STATE CODE
STATE MT	FIELD MATERIAL SAMPLING	
LTPP EXPERIMENT Wolf Pt 5	AND FIELD TESTING	SHRP ASSIGNED ID
SAMPLE/TEST: (a) Before Sect	ion (h) After Section	ne Direction // 8
•	TOG OF SHOTT DEP PROPE	V #2 FIELD SET NO.
OPERATOR Dan M	OUTPMENT HISED	DCG SHEET: 08 SHEET NUMBER OF
AUGERING DATE t = 24 - 07	LOCATION STATION: PD 3- 1 CH -	SHEET NUMBER OF
NOTE: SHOULDER AUGER PROBE I	S AN OPTIONAL ITEM, AS DIRECT	ED BY SAR.
Scale Depth from	Material Description	Material
(feet) Surface (Feet)	Company of the second of the s	Code
36/8"	PMS	- Oute
2 8.5" (Recov)	1 678	4 - 14 S. W. H.
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 5	Sample 12.25 "
3 - 23.5"		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	dh han soil	< 20.5 "
4	dy Irn stiff grave	19
	1 3 V	
many the Carponian and the major to the second	Sub grade dk bou - blk s	
	highly Plastic clay some g.	
6	Jone 4.	ravel 17
		ravel 12610 ws 1811
7		(11:5 Recov)
		A STATE OF THE PARTY OF THE PAR
8	-	
	hir. plast. cly	Shelby Tube
9	1 2 ST. CIG	
	1	42.5"-66.5"
10	I.	(15.25 " Recov)
	bun Vifine sand	
11	-5:7+	Shelby Tube
		66.5"- 90.5"
12	dk brn clusy grown	66.3 - 40.3
	9,000	(15" Receive)
13	dh bank.	(15" Record
	cly	loose mar'l on
14	cly.	
		Top separate to the second
15	And the second of the second o	
16		
	<u></u>	9 22
17	6 to 1	
	ord bra elyey grow	el
18	1-3 3,00	· / / / / / / / / / / / / / / / / / / /
19		ψ.
20	*	
1 Wry To TD	()	
EFUSAL WITHIN 20 FEET (Y/N):_	<u>N</u> DEPTH TO REFU	SAL:(FEET)
ERTIFIED	VERIFIED AND APPROVED	MONTH-DAY-YEAR
G. Zeihen		19
rew Chief, Contractor	SHRP Representative	Date
Efiliation: MDT	Affiliation:	* .

DD 2)			
Project No. <u>802</u>	Contr	ol No	•
Project Name RESEARCH			
Core Log. No. <u>CL-3. 23-02</u>			
Driller MAYRE RRY Cr			
Date 4 24 02 Drill sime 0	Shelbys_	# Bag Sa	mples
Drilling Method - Augers 8	Casing	<u>/</u> Size/	Bit FGR
Elev Water Lev			
=======================================			
Comments:			
	202222222222222		=======================================
0.0- ASPHALT . 0.8	SPT/SHELBYS	PSI	RATE
BRAVEL BR SILLY	SS 205-4	10.5 12 BL	200
GRAVEZ 2.5	23.5 - 40.5	BAG	
DK BROWN CLAY	425-66.5	SHELBY	
165 BROWN	66.5- 90.5	SELRY	
FINE SAUD W/S	DRILLED -	TC 20	
PEA GRAVEL	No JAME		
20.0			
Ro4			
2			
).			

V-

Project No. 8021	Contro	ol No		
Project Name RESEARCH	Proj Sta.	: WOLF	Point	
Core Log. No. CL-3-24-02				. :
Driller MAYBERRY Cre	WJOHN-SAM	Geotech GR	56 - Wink 0	6
Date 4 24 02 Drill Simco	Shelbys_	# Bag	Samples	-
Drilling Method - Augers 8"	Casing	<u>/</u> Size	Bit FbR	
Elev Water Leve				
141120111011011111111111111111111111111			=======================================	=
Comments:				_
				-
				-
				-
/				•
0.0- Asphart 0.5		i	RATE	
A CEMENT BASE 213		BAG		
DK BROWN CLAY				
	45- 70.5"			
20.0 BoH	DRILLEO T	0 20		
		NO SA	mp.	

)				
			•	•

Location: Wolf Point
Longitude: 105°31' W
Lattitude: 47°57' N

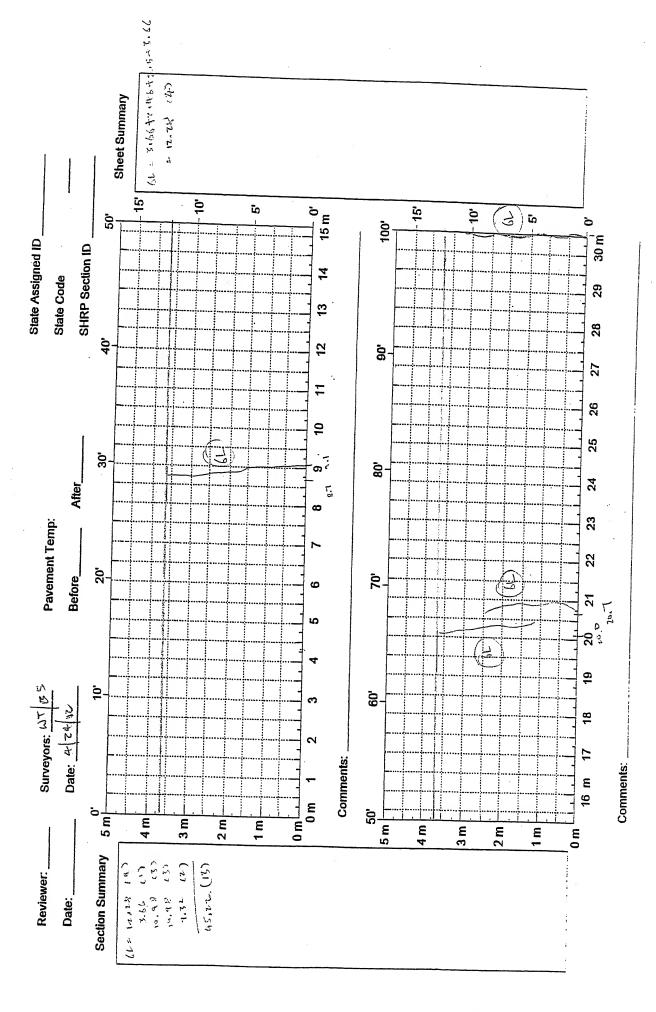
SHEET 1: DISTRESS SURVEY

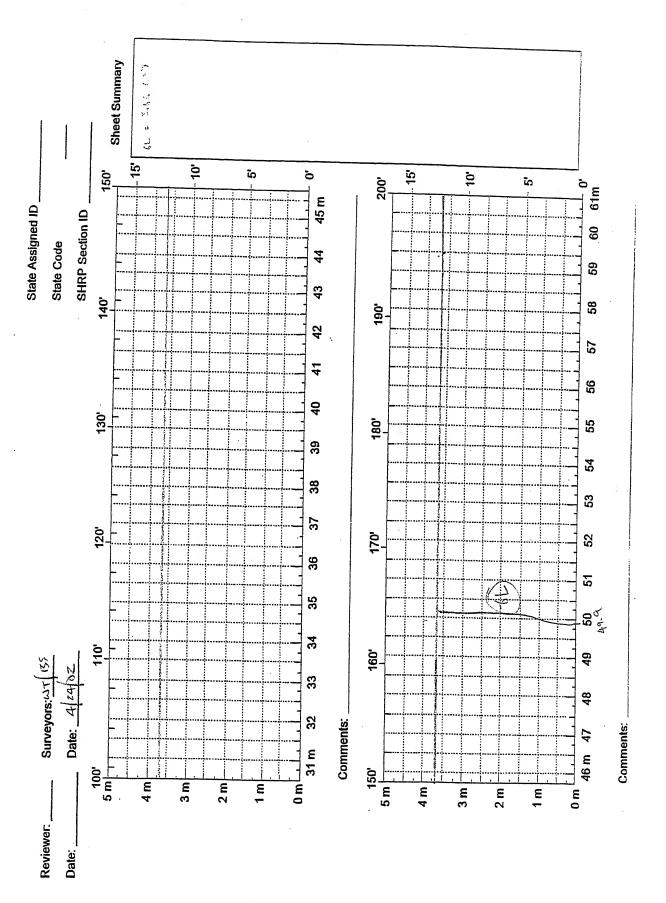
DATE OF SURVEYO	DISTRESS SURVEY (MONTH/DAY/YEAF DR 1: WT	R) SURVEYOR 2	2: –	4/24/02 BS
		SEVERITY LEVI	 FI	
DISTRESS		LOW	MODERATE	HIGH
CRACKIN	G			
1	FATIGUE CRACKING (SQUARE METERS)	0.0	0.0	0.0
2	BLOCK CRACKING (SQUARE METERS)	0.0	0.0	0.0
3	EDGE CRACKING (METERS)	0.0	0.0	0.0
4	LONGITUDINAL CRACKING			
	4a. Wheelpath (Meters)	0.0	0.0	0.0
	Length Sealed (Meters)	0.0	0.0	0.0
	4b. Non-Wheelpath (Meters) Length Sealed (Meters)	0.0	0.0	0.0
5	REFLECTION CRACKING AT JOINTS	Not Recorded		
6	TRANSVERSE CRACKING			
	Number of Cracks	13	0	0
	Length (Meters)	45.2	0.0	0.0
	Length Sealed	0.0	0.0	0.0
PATCHING	AND POTHOLES			
7	PATCH / PATCH DETERIORATION (Number) (Square Meters)	0.0	0.0	0.0
8	Potholes (Number) (Square Meters)	0.0	0.0	0.0

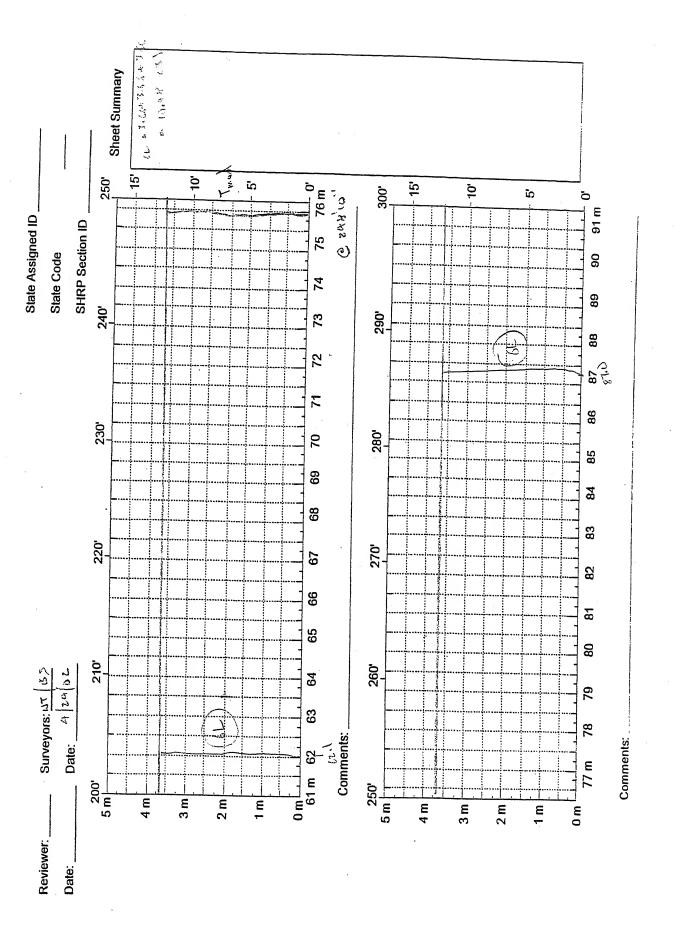
Location: Wolf Point
Longitude: 105°31' W
Lattitude: 47°57' N

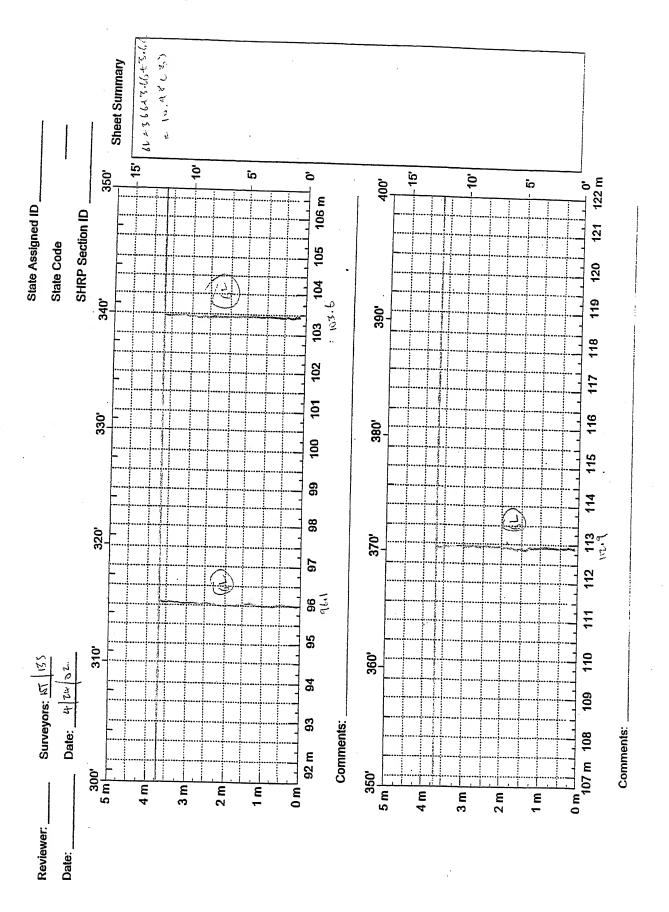
SHEET 2: DISTRESS SURVEY

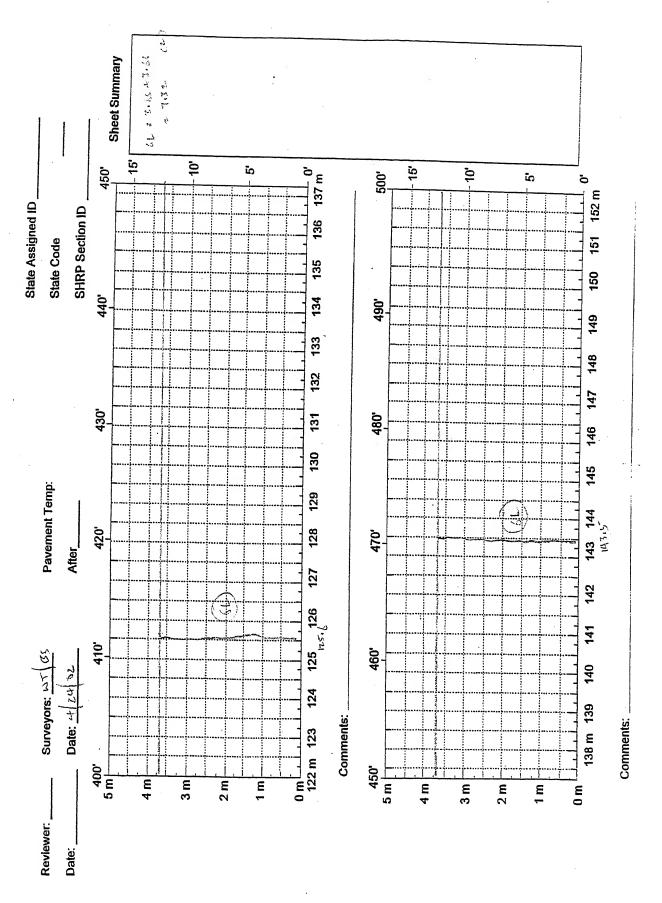
DATE	OF DISTRESS SURVEY (MONTH/DAY/	YEAR)	4/15/02
SURV	EYOR 1: WT	SURVEYOR 2:	BS
DISTR	ESS TYPE	SEVERITY LEVEL	
		N/A	
SURF	ACE DEFORMATION		
9	RUTTING - REFER TO PROFILE [DATA	
10	SHOVING (Number) (Square Meters)		0.0
SURFA	ICE DEFECTS		
11	BLEEDING (Square Meters)		0.0
12	POLISHED AGGREGATE (Square Meters)		0.0
13	RAVELING (Square Meters)		0.0
MISCEL	LANEOUS DISTRESSES		
14	LANE-TO-SHOULDER DROPOFF -	Not Recorded	
15	WATER BLEEDING AND PUMPING (Number) Length of Affected Pavement (Meters)	i	0.0
16	OTHER (Describe)		











Location: Wolf Point
Longitude: 105°31' W
Lattitude: 47°57' N

FWD Data

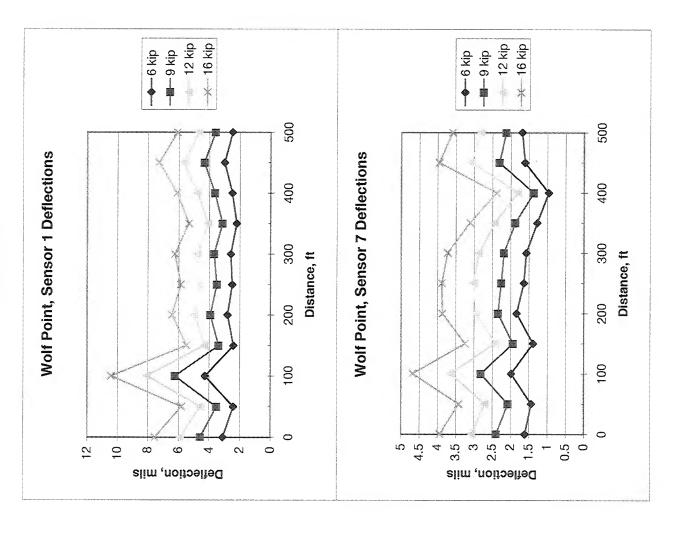
Test Date: ____10/9/01

Layer	Material Type	Average Thickness in.
1	ACP	3.7
2	CTB	19.8
3	Subgrade	-

Station	Load	Deflection 1	Deflection 2	Deflection 3	Deflection 4	Deflection 5	Deflection 6	Deflection 7
ft	kips	mils						
0+00	7.20	3.73	3.40	3.22	3.03	2.77	2.34	1.93
0+00	10.07	5.11	4.70	4.42	4.14	3.78	3.23	2.68
0+00	12.34	6.06	5.57	5.24	4.92	4.48	3.79	3.15
0+00	15.51	7.33	6.75	6.37	5.94	5.48	4.62	3.82
0+50	7.23	2.93	2.75	2.61	2.52	2.35	2.05	1.73
0+50	9.97	3.90	3.69	3.51	3.36	3.16	2.76	2.30
0+50	12.32	4.71	4.52	4.26	4.04	3.80	3.32	2.78
0+50	15.39	5.61	5.39	5.08	4.81	4.50	3.88	3.29
1+00	7.08	5.04	4.51	4.22	3.88	3.47	2.84	2.34
1+00	9.86	6.83	6.11	5.73	5.21	4.69	3.84	3.08
1+00	12.33	8.30	7.44	6.94	6.31	5.70	4.64	3.74
1+00	15.18	9.90	8.92	8.30	7.53	6.76	5.56	4.44
1+50	7.09	2.85	2.67	2.43	2.25	2.11	1.89	1.64
1+50	9.96	3.74	3.58	3.24	3.02	2.81	2.51	2.14
1+50	12.29	4.43	4.25	3.83	3.54	3.31	2.93	2.48
1+50	15.40	5.29	5.09	4.59	4.22	3.96	3.49	3.13
2+00	7.09	3.31	3.17	3.06	2.96	2.69	2.38	2.17
2+00	9.91	4.32	4.12	3.97	3.84	3.50	3.05	2.58
2+00	12.29	5.06	4.79	4.63	4.48	4.08	3.53	3.02
2+00	15.42	6.21	5.93	5.78	5.50	5.01	4.31	3.73
2+50	7.28	3.04	2.85	2.73	2.65	2.46	2.20	1.99
2+50	9.72	3.79	3.50	3.37	3.19	3.04	2.75	2.44
2+50	12.00	4.63	4.30	4.12	3.94	3.76	3.42	3.02
2+50	15.47	5.67	5.34	5.17	4.89	4.62	4.19	3.76

Station	Load	Deflection 1	Deflection 2	Deflection 3	Deflection 4	Deflection 5	Deflection 6	Deflection 7
ft	kips	mils						
3+00	7.24	3.13	2.97	2.83	2.69	2.53	2.25	1.90
3+00	9.64	3.95	3.74	3.59	3.41	3.18	2.76	2.34
3+00	12.04	4.82	4.56	4.37	4.15	3.87	3.38	2.88
3+00	15.44	6.04	5.75	5.52	5.18	4.85	4.21	3.60
3+50	7.18	2.64	2.47	2.36	2.25	2.09	1.81	1.53
3+50	9.61	3.35	3.14	3.03	2.85	2.67	2.29	2.00
3+50	11.94	4.05	3.82	3.69	3.49	3.24	2.79	2.42
3+50	15.41	5.14	4.81	4.67	4.38	4.09	3.59	3.00
4+00	7.09	2.96	2.89	2.81	2.82	2.78	1.33	1.14
4+00	9.59	3.87	3.78	3.73	3.70	3.66	1.71	1.46
4+00	11.88	4.72	4.63	4.55	4.50	4.47	2.11	1.79
4+00	15.41	5.88	5.82	5.65	5.62	5.61	2.67	2.30
4+50	7.11	3.56	3.28	3.13	2.94	2.71	2.33	1.91
4+50	9.58	4.60	4.24	4.03	3.78	3.50	2.98	2.46
4+50	12.01	5.65	5.22	4.95	4.66	4.32	3.69	3.07
4+50	15.34	6.99	6.40	6.14	5.74	5.34	4.56	3.80
5+00	7.11	2.94	2.77	2.60	2.53	2.45	2.22	2.00
5+00	9.61	3.84	3.64	3.41	3.25	3.06	2.71	2.27
5+00	11.99	4.68	4.41	4.15	4.03	3.75	3.26	2.81
5+00	15.37	5.86	5.51	5.18	4.85	4.61	4.09	3.46

non-decreasing deflection

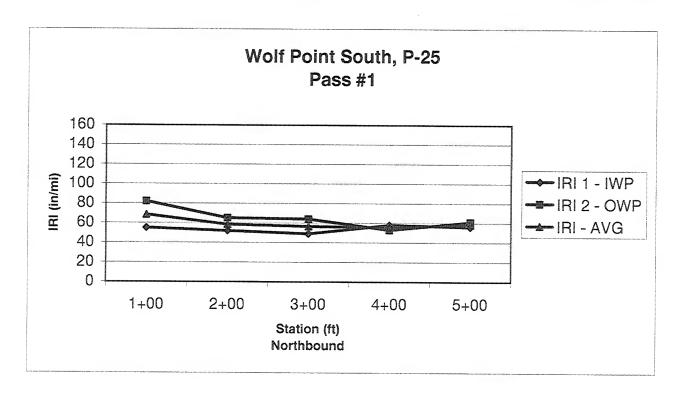


Location: Wolf Point
Longitude: 105°31' W
Lattitude: 47°57' N

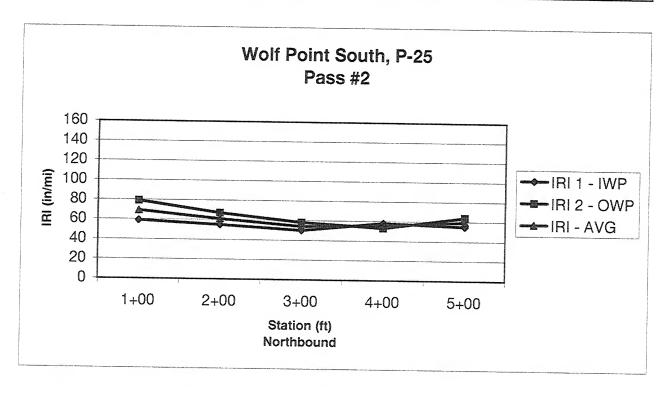
Profile Data

Test Date: 9/26/01

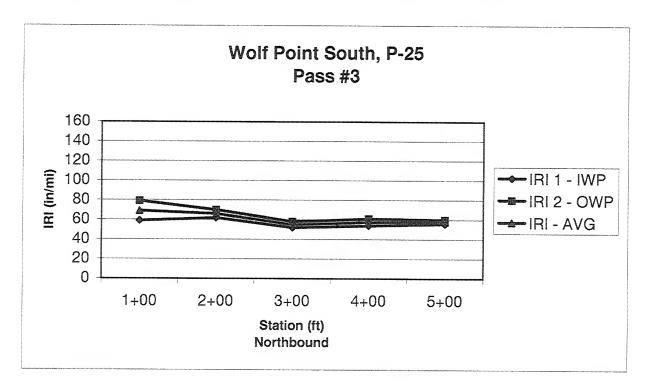
Station	From	То	Length	Rut Depth	Rut Depth	IWP	OWP	AVG.
			_	Average	Std.Dev.	IRI	IRI	IRI
ft.	ft		ft.	ir	١.		in./mi.	
1+00	0	100	100	0.00	0.001	55	82	69
2+00	100	200	100	0.02	0.015	52	65	59
3+00	200	300	100	0.02	0.013	49		1
4+00	300	400	100	0.00	0.000	58	53	
5+00	400	500	100	0.01	0.008	56	61	59
AVG.				0.010	0.007	54.0		
STD.				0.010	0.007	3.536	10.607	5.196



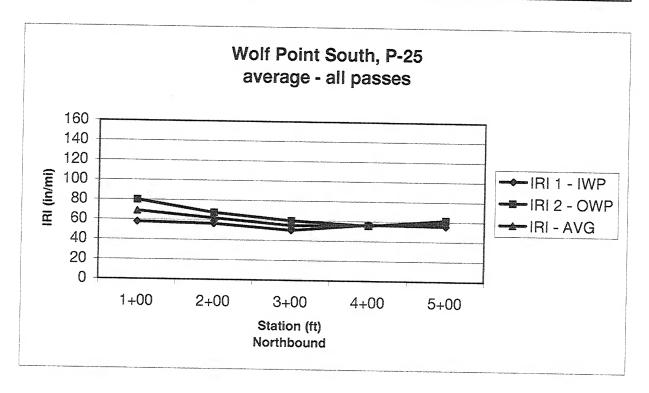
Station	From	То	Length	Rut Depth	Rut Depth	IWP	OWP	AVG.
	ŀ			Average	Std.Dev.	IRI	IRI	IRI
ft.	ft	•	ft.	ir	٦.	······································	in./mi.	
1+00	0	100	100	0.00	0.000	59	79	69
2+00	100	200	100	0.01	0.009	55	67	61
3+00	200	300	100	0.02	0.015	50	58	54
4+00	300	400	100	0.00	0.000	58	53	56
5+00	400	500	100	0.01	0.013	55	64	60
AVG.				0.008	0.007	55.4	64.2	59.8
STD.				0.008	0.007	3.507	9.884	5.880



Station	From	То	Length	Rut Depth	Rut Depth	IWP	OWP	AVG.
				Average	Std.Dev.	IRI	IRI	IRI
ft.	ft	ft.		in.			in./mi.	
1+00	0	100	100	0.00	0.000	59	79	69
2+00	100	200	100	0.00	0.000	62	70	66
3+00	200	300	100	0.00	0.000	52	58	55
4+00	300	400	100	0.00	0.000		61	58
5+00	400	500	100	0.01	0.011	. 56	60	58
AVG.				0.002	0.002	56.6	65.6	61.1
STD.				0.004	0.005	3.975	8.792	6.046



Station	From	То	Length	Rut Depth	Rut Depth	IWP	OWP	AVG.
				Average	Std.Dev.	IRI	IRI	IRI
ft.	ft.		ft.				in./mi.	1111
1+00	0	100	100	0.00	0.000	58	80	69
2+00	100	200	100	0.01	0.008	56	67	62
3+00	200	300	100		0.009	50	60	55
4+00	300	400	100		0.000	57	56	
5+00	400	500	100		0.011	56	62	56 50
AVG.				0.007	0.006	55.3	64.9	59
STD.	***			0.006	0.005	2.887	9.403	60.1 5.503



APPENDIX G FORT BELKNAP

Location:

Fort Belknap

Longitude:

108°30' W 48°25' N

Lattitude:

Pavement Structure

Date:

March 2002

			Thickness, in		1]
L	.ayer#	Material Type	Before	After	Average	Commets
	1	ACP	5.1	3.9	4.5	Chip Seal
	2	CTB	8.0	7.0	7.5	
	3	Base	41.0	37.0	39.0	Sandy Clayer Gravel
	4	Subgrade	-	-	-	Brown Fine Sand with some Gravelly Clay

Materials Sampling

Date:

4/25/02

Material Type	Quantity	Comments
ACP/CTB	14 cores	2-10" & 12-6" cores
CTB	1 bag	ACP/CTB cores
Base		
Subgrade	4 bags	1 TBD

^{* 4} bags of material from station 5+56 could not be clearly identified because the layers could not be distinguished

STATE MT LTPP EXPERIM SAMPLE/TEST: OPERATOR O AUGERING DATE TOP OF ROCK I NOTE: SHOULD	ENT FT Belting & RO	AND FIELD TESTING SHE DUTE/HIGHWAY P-/ Lane LOG OF SHOULDER PROBE LEMENT USED SHE CATION STATION: R P 442 (E. E. J.) A OFFSET: feet N OPTIONAL ITEM, AS DIRECTED B	Direction wa
Scale (feet)	Depth from Surface (Feet)	Material Description	Haterial
11	5.0 "	PMS	Code
2	18.01/ K	A OTHER BASECOURSE > 7	5 plit Spaon 52 Blows 13 4 + 18 "- 314
4		Sandy clyey quovel	Sam-yle 7.0"- 120 4
6	7.3	bracking Sand W/Thin gry.cly layers incr.cly b	St mple 30.01 tag" 51 Blows Semple 36.04 - 42"
88		5.bgrade	59mple 50 1- 60"
9	10-0'		
		Bry Fina So.	
		Bun fine Sond w/great	Sample 10'-15
13		Sky wy .	
15			
16			
	18.		

20 Pry @ boron	Saturated	
REFUSAL WITHIN 20 FEET (Y/N):_	DEPTH TO REFUSAL:	(FEET)
CERTIFIED	VERIFIED AND APPROVED	MONTH-DAY-YEAR - 19
Crew Chief, Contractor Affiliation: 107	SHRP Representative Affiliation:	Date
	• *	

Scale (feet)	Depth from Surface (Feet)	Material Description	Material Code
	1	PMS	DOUG
2	•	CTB ??	A A -4
		the hon gravely 4 13.5"	Drilling @ 7"
_3		Son 8/sandy 16.0"	Somple 711-1311
4	* * * * *	9 rave 1 (33.0"	Sample
	4.0'	23,0"	16"-21"
.i. 5 100 mm -i		ben fine sand we local	
6		STIER alog & grovel	Somple x2
-°		<u>Subgrede</u>	33" — 60"
7		=== grode	
		्राच्या विश्ववासम्बद्धाः स्थापन्तः । १००० क्षि	
8	7.51		
9		dr bin clayey sand	Sample
	ere e e e e e e e e e e e e e e e e e e	incr. clay 1	
LO			7.5' -18'
		•	
	11'		
2		die ban clis	·
.3			*
	1.	1 (org - brn grave (zones)	
4	Ų.	(1 die bro elyen sand	
			All All Andrews
5			The second secon
6	• • • •		
7			
8		e e	20 A
"——	18'	¥	
9	·	bon very time clayey said	
		Saturured	, si
	ry@ borrow	- 11 11 - 11 70 4	

18		
19	bon very time clayer said	
20 Pry @ borrow	bon very time clayey soul	.
REFUSAL WITHIN 20 FEET (Y/N):	(FEET)
ERTIFIED G. Zeihen	VERIFIED AND APPROVED	MONTH-DAY-YEAR 19
rew Chief, Contractor ffiliation: <u>MDT</u>	SHRP Representative Affiliation:	Date
	Form 505 /Amrel 1000	

Project No. 8021	Contro	ol No				
Project Name RESEARCH F	>Ro'(Sta	.: FT. BEL	NAP / HARLE	n\		
Core Log. No. <u>CL-3-25-0</u>	Hole	No()		
riller MAYBERRY Cre)wi		
Date 4 25 02 Drill 5: mco	Shelbys	# Bag	Samples			
Drilling Method - Augers 8	Casing	_/Size	/Bit Fincer		•	
Elev Water Lev						
***====================================				==		
Comments:						
				_		
non Acoda, T D. 7	1 000 /0000		•			
		PSI	RATE	-		
BROWN SANDY	13"- 31"	SS <i>S</i> 2	count	-		
GRADEL 4.5	13"- 51" 30"- 48"	55 54 55 54	count	-		
BROWN SANDY BROWN FINE	13"- 51" 30"- 48" BAL A 42"	55 54 55 54	count	-		
BROWN SANDY BROWN FINE SILTY SAND W/	13"- 51" 30"- 48" BAL A 42"	55 54 55 54	count	-		
BROWN SANDY BROWN FINE	13"- 51" 30"- 48" BAL A 42"	55 54 55 54	count	-		
BROWN SANDY BROWN FINE SILTY SAND W/	13"- 51" 30"- 48" BAL A 42"	55 54 55 54	count			
BROWN SANDY BROWN FINE SILTY SAND W/	13"- 51" 30"- 48" BAL A 42"	55 54 55 54	count			
BROWN SANDY BROWN FINE SILTY SAND W/	13"- 51" 30"- 48" BAL A 42"	55 54 55 54	count			
BROWN SANDY BROWN FINE SILTY SAND W/	13"- 51" 30"- 48" BAL A 42"	55 54 55 54	count			
BROWN SANDY BROWN FINE SILTY SAND W/	13"- 51" 30"- 48" BAL A 42"	55 54 55 54	count			
BROWN SANDY BROWN FINE SILTY SAND W/	13"- 51" 30"- 48" BAL A 42"	55 54 55 54	count			
BROWN SANDY BROWN FINE SILTY SAND W/	13"- 51" 30"- 48" BAL A 42"	55 54 55 54	count			

Project No. 8021	Contro	l No		_	
Project Name RESEARCH	Sta.	: FT. BELW	DAP (HARLEN	_/	
Core Log. No. <u>C.1-3-26-02</u>	Hole :	No. 2		_ ·	
Driller MAYBERRY Cre	WIOLW SAM	Geotech 68	26 d Wincon	<u>)</u>	
Date 4 25 102 Drill SIMCO	Shelbys	# Bag	Samples	-	
Drilling Method - Augers 8"					
Elev Water Lev	elPi	pe Installed		_	
=======================================		==============	============	=	
Comments:				_	
				- ,	
				<u>-</u> -	
				-	
A		*********	**********	=	
	SPT/SHELBYS	PSI	RATE		
	BAG AT 21'				
SANDY BRAVEL	1 .				
75 DK BROWN	DRILLED	1			
FINE SAND W/S	120 5	Mun A			
6 RAUEL					
				**	

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				-	

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Location: Fort Belknap
Longitude: 108°30' W
Lattitude: 48°25' N

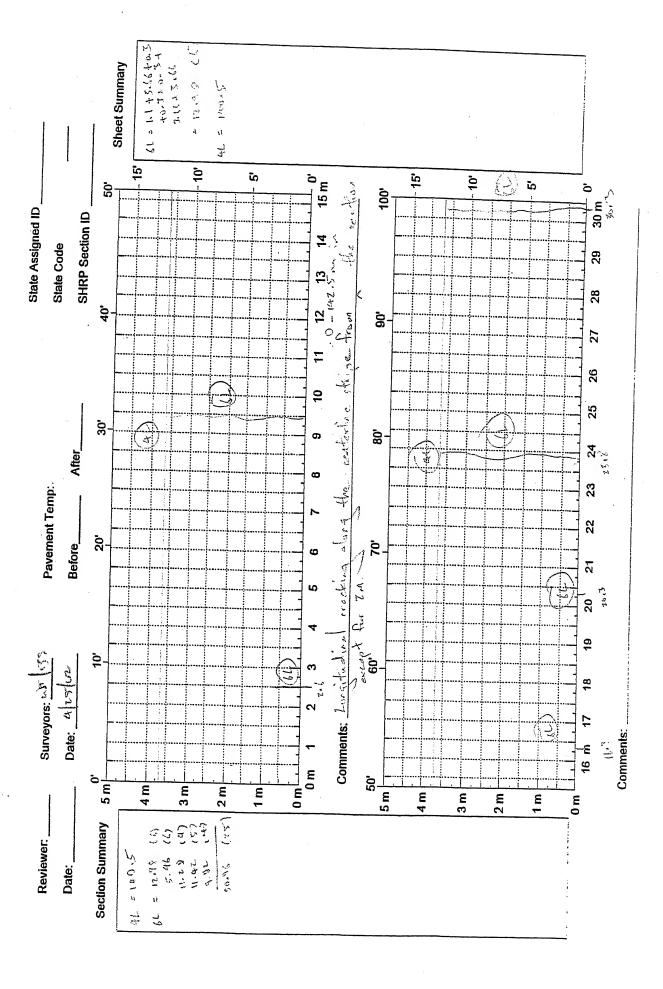
SHEET 1: DISTRESS SURVEY

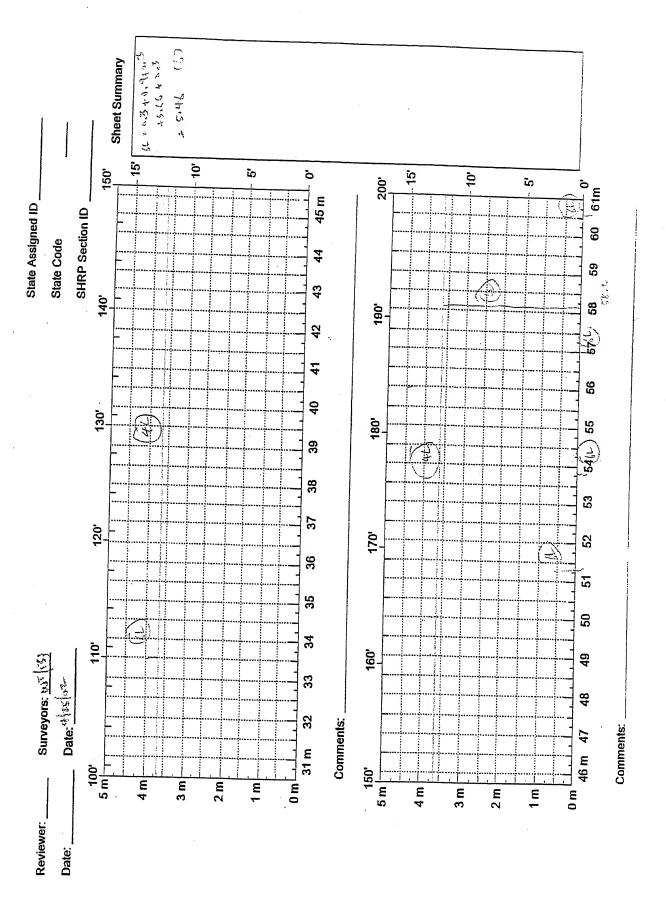
DATE OF	DISTRESS SURVEY (MONTH/DAY/YEAR)			4/25/02
SURVEYO		SURVEYOR 2	2: –	BS
		SEVERITY LEV		
DISTRESS		LOW	MODERATE	HIGH
CRACKING	G			
1	FATIGUE CRACKING			
	(SQUARE METERS)	0.0	0.0	0.0
2	BLOCK CRACKING			
	(SQUARE METERS)	0.0	0.0	0.0
3	EDGE CRACKING (METERS)	0.0	0.0	0.0
4	LONGITUDINAL CRACKING			
	4a. Wheelpath (Meters)	0.0	0.0	0.0
	Length Sealed (Meters)	0.0	0.0	0.0
	4b. Non-Wheelpath (Meters)	140.5		0.0
	Length Sealed (Meters)	0.0	0.0	0.0
5	REFLECTION CRACKING AT JOINTS	Not Recorded		
6	TRANSVERSE CRACKING			
	Number of Cracks	25		0
	Length (Meters)	51.0	0.0	0.0
	Length Sealed	0.0	0.0	0.0
PATCHING	AND POTHOLES			
7	PATCH / PATCH DETERIORATION			
	(Number)	0	0	0
	(Square Meters)	0.0	0.0	0.0
8	Potholes			
	(Number)	0	0	0
	(Square Meters)	0.0	0.0	0.0

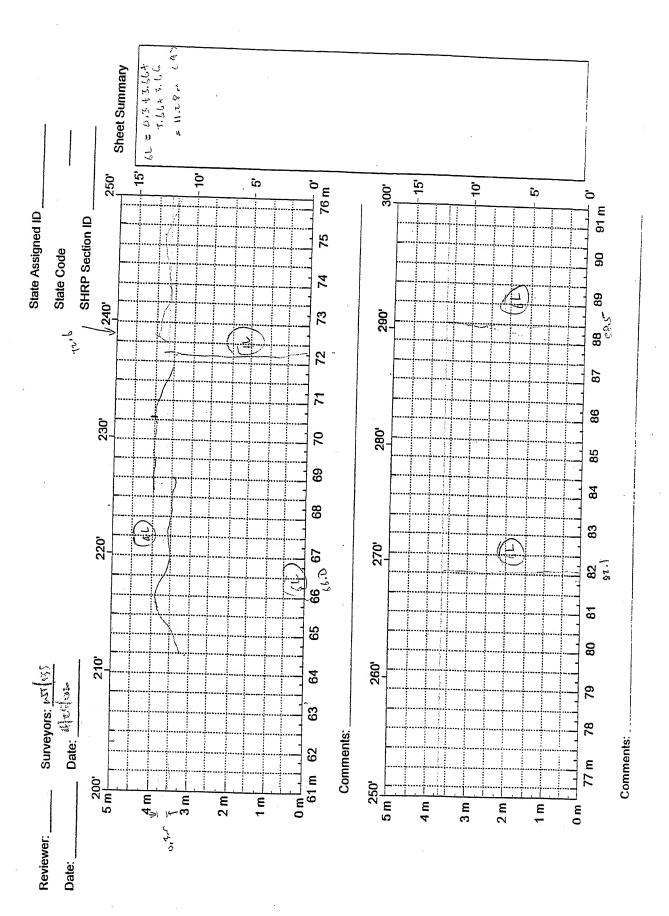
Location: Fort Belknap
Longitude: 108°30' W
Lattitude: 48°25' N

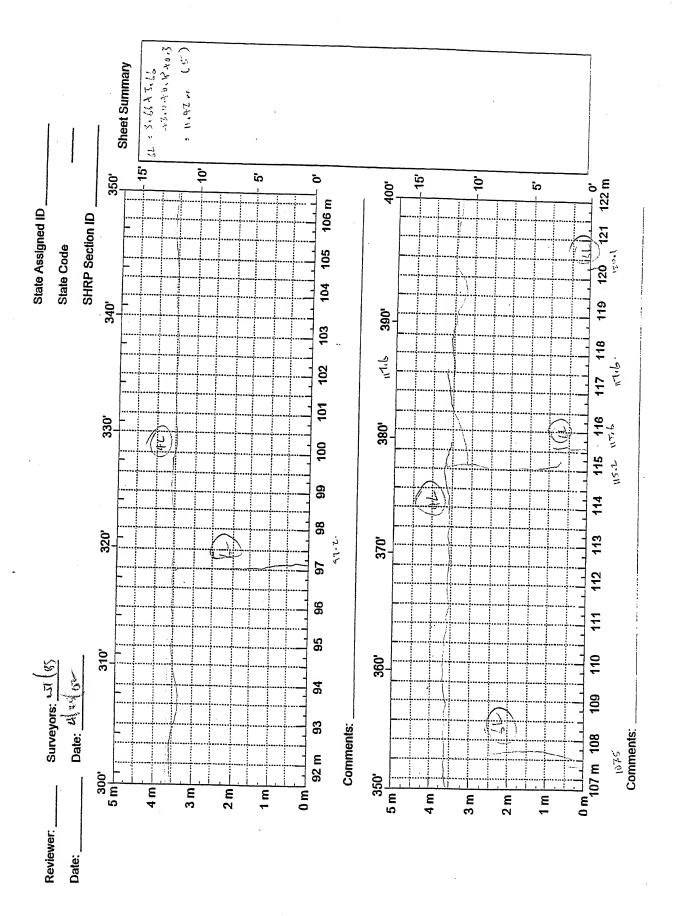
SHEET 2: DISTRESS SURVEY

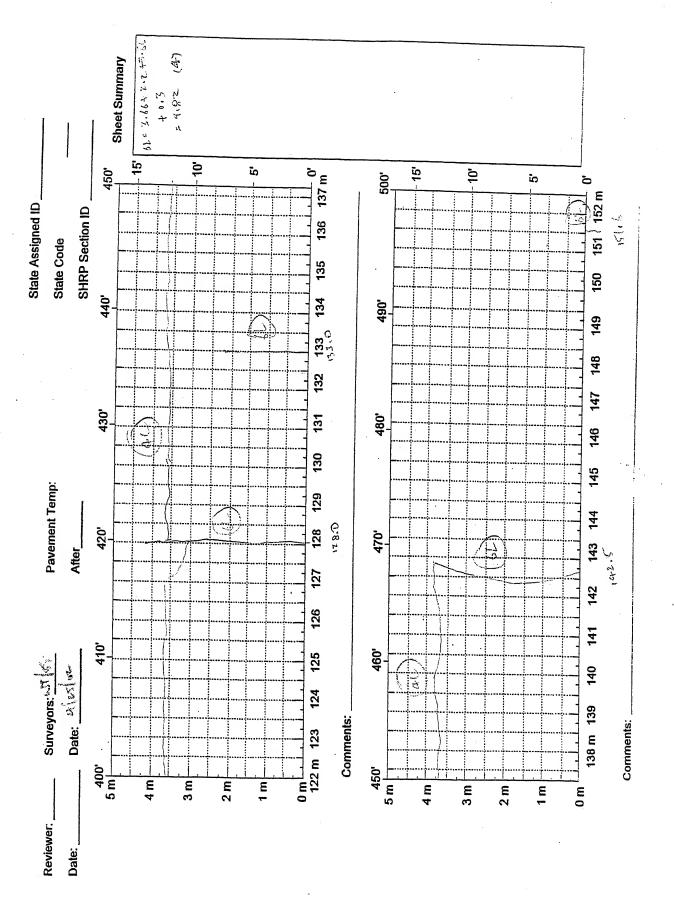
	OF DISTRESS SURVEY (MONTH/DAY/YEAR) EYOR 1: WT SURVEYO	MR 2: 4/25/02
	SEVERITY L	EVEL
DISTR	ESS TYPE N/A	
SURFA	ACE DEFORMATION	
9	RUTTING - REFER TO PROFILE DATA	
10	SHOVING (Number) (Square Meters)	0.0
SURFA	ACE DEFECTS	
11	BLEEDING (Square Meters)	0.0
12	POLISHED AGGREGATE (Square Meters)	0.0
13	RAVELING (Square Meters)	0.0
MISCEL	LLANEOUS DISTRESSES	
14	LANE-TO-SHOULDER DROPOFF - Not Recorded	
15	WATER BLEEDING AND PUMPING (Number) Length of Affected Pavement (Meters)	0.0
16	OTHER (Describe)	











Location: Fort Belknap
Longitude: 108°30' W
Lattitude: 48°25' N

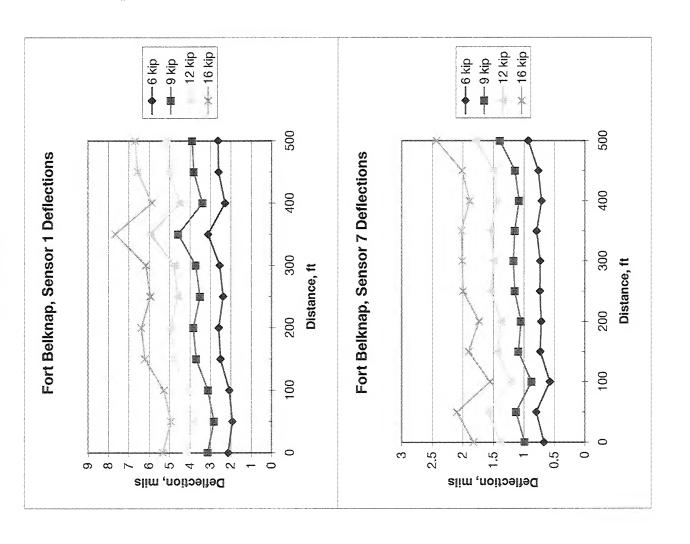
FWD Data

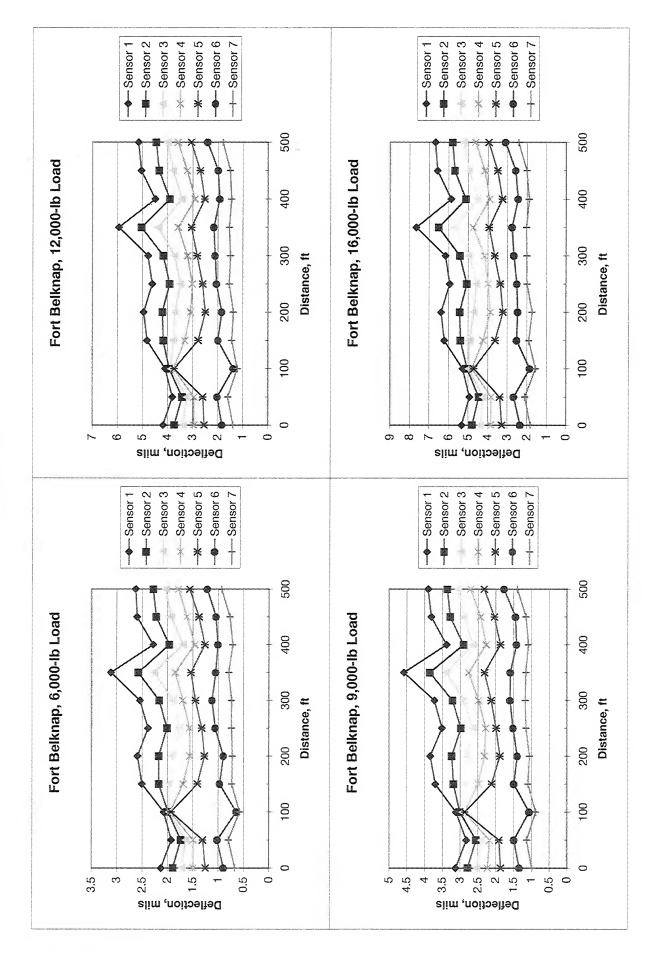
Test Date: 10/9/01

Layer	Material	Average		
	Туре	Thickness		
		in.		
1	ACP	4.5		
2	CTB	7.5		
3	Base	39.0		
4	Subgrade	-		

Station	Load	Deflection 1	Deflection 2	Deflection 3	Deflection 4	Deflection 5	Deflection 6	Deflection 7
ft	kips	mils						
0+00	7.16	2.54	2.26	2.04	1.78	1.49	1.07	0.80
0+00	9.23	3.20	2.86	2.60	2.28	1.91	1.37	1.01
0+00	11.36	3.95	3.53	3.19	2.79	2.40	1.73	1.31
0+00	14.57	4.85	4.36	3.97	3.50	2.99	2.13	1.66
0+50	7.09	2.27	2.05	1.94	1.76	1.54	1.20	0.94
0+50	9.31	2.92	2.64	2.49	2.25	1.97	1.54	1.17
0+50	11.35	3.60	3.23	3.06	2.78	2.45	1.91	1.50
0+50	14.58	4.49	4.06	3.86	3.48	3.08	2.43	1.91
1+00	7.01	2.42	2.32	2.30	2.27	2.25	0.75	0.67
1+00	9.17	3.17	3.06	2.99	2.93	2.92	1.08	0.89
1+00	11.38	3.88	3.73	3.67	3.56	3.54	1.30	1.15
1+00	14.51	4.79	4.58	4.52	4.36	4.27	1.68	1.41
1+50	7.07	2.95	2.56	2.31	1.99	1.66	1.14	0.86
1+50	9.25	3.80	3.27	2.95	2.56	2.17	1.53	1.12
1+50	11.38	4.57	3.95	3.57	3.14	2.63	1.89	1.36
1+50	14.54	5.65	4.90	4.47	3.85	3.29	2.29	1.73
2+00	7.05	3.04	2.55	2.23	1.83	1.49	1.05	0.84
2+00	9.10	3.88	3.27	2.84	2.34	1.90	1.41	1.06
2+00	11.36	4.69	3.98	3.51	2.91	2.36	1.74	1.30
2+00	14.51	5.79	4.93	4.28	3.51	2.92	2.24	1.57
2+50	7.03	2.79	2.35	2.06	1.83	1.55	1.24	0.86
2+50	9.16	3.57	3.03	2.68	2.32	2.02	1.54	1.17
2+50	11.24	4.32	3.67	3.27	2.82	2.44	1.92	1.44
2+50	14.60	5.42	4.63	4.18	3.63	3.07	2.29	1.82

Station	Load	Deflection 1	Deflection 2	Deflection 3	Deflection 4	Deflection 5	Deflection 6	Deflection 7
ft	kips	mils						
3+00	6.97	2.95	2.51	2.20	1.97	1.68	1.30	0.85
3+00	9.14	3.78	3.26	2.95	2.52	2.16	1.62	1.19
3+00	11.35	4.52	3.94	3.52	3.03	2.67	1.99	1.41
3+00	14.34	5.52	4.86	4.43	3.74	3.27	2.39	1.80
3+50	6.92	3.59	2.97	2.60	2.13	1.77	1.21	0.91
3+50	9.14	4.65	3.91	3.43	2.80	2.35	1.61	1.17
3+50	11.31	5.60	4.75	4.12	3.37	2.87	2.03	1.45
3+50	14.48	6.93	5.89	5.13	4.29	3.56	2.50	1.83
4+00	6.94	2.64	2.27	1.96	1.69	1.46	1.16	0.82
4+00	9.08	3.41	2.93	2.65	2.29	1.88	1.43	1.09
4+00	11.20	4.19	3.65	3.20	2.71	2.35	1.79	1.35
4+00	14.34	5.26	4.59	4.03	3.50	2.92	2.20	1.69
4+50	6.91	2.99	2.56	2.22	1.86	1.59	1.20	0.88
4+50	9.11	3.86	3.32	2.93	2.45	2.06	1.46	1.16
4+50	11.20	4.71	4.05	3.52	3.00	2.52	1.85	1.40
4+50	14.32	5.88	5.09	4.44	3.72	3.13	2.31	1.80
5+00	6.97	3.05	2.65	2.36	2.07	1.81	1.41	1.08
5+00	9.11	3.95	3.40	3.09	2.74	2.35	1.79	1.41
5+00	11.23	4.83	4.17	3.74	3.35	2.86	2.25	1.67
5+00	14.36	6.00	5.21	4.68	4.15	3.55	2.78	2.18





Location: Longitude: Fort Belknap 108°30' W

Lattitude:

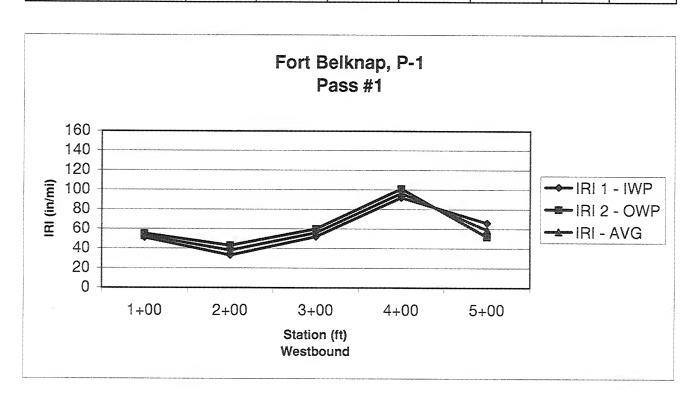
48°25' N

Profile Data

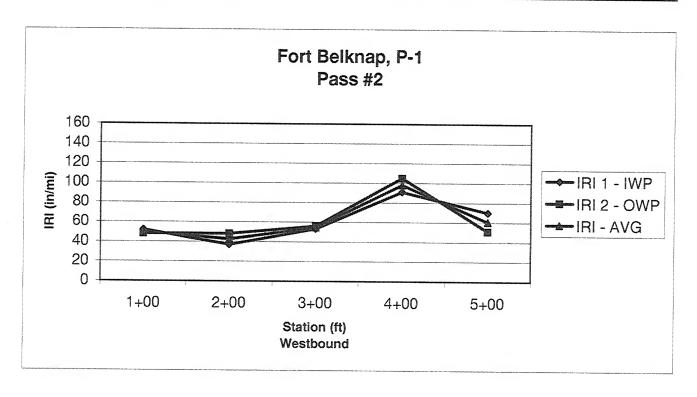
Test Date:

9/26/01

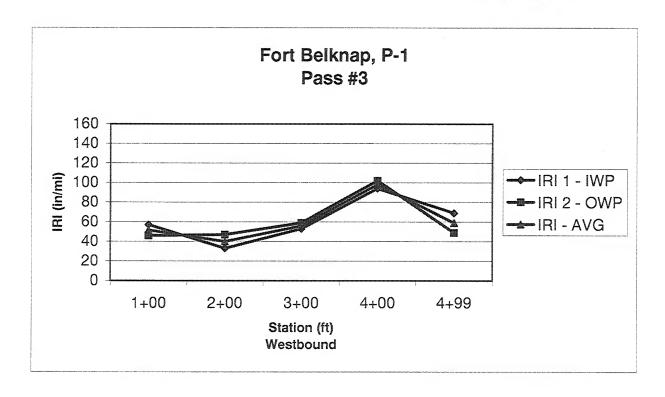
			·		······	· · · · · · · · · · · · · · · · · · ·		
Station	From	То	Length	Rut Depth	Rut Depth	IWP	OWP	AVG.
				Average	Std.Dev.	IRI	IRI	IRI
ft.	ft.		ft.	ir	٦.		in./mi.	
1+00	0	100	100	0.11	0.034	51	55	53
2+00	100	200	100	0.08	0.025	33	43	38
3+00	200	300	100	0.09	0.027	52	60	56
4+00	300	400	100	0.17	0.040	92	101	97
5+00	400	500	100	0.18	0.024	66	52	59
AVG.				0.126	0.030	58.8	62.2	60.5
STD.				0.046	0.007	21.948	22.554	21.685



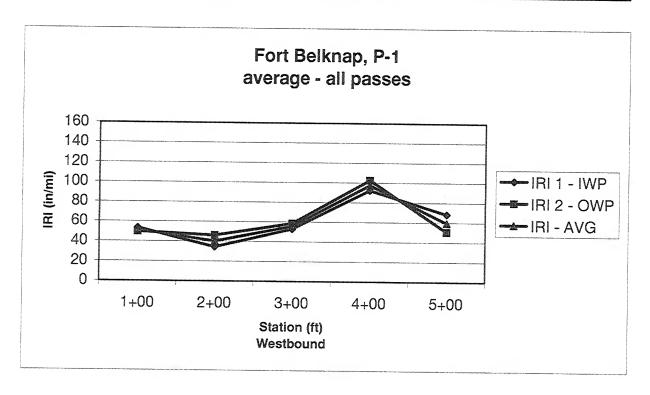
Station	From	То	Length	Rut Depth	Rut Depth	IWP	OWP	AVG.
				Average	Std.Dev.	IRI	IRI	IRI
ft.	ft.		ft.	ir	٦.	·	in./mi.	
1+00	0	100	100	0.09	0.055	52	48	50
2+00	100	200	100	0.02	0.014	37	48	43
3+00	200	300	100	0.07	0.024	53		55
4+00	300	400	100	0.16	0.039	91	105	98
5+00	400	500	100	0.17	0.021	70	51	61
AVG.				0.102	0.031	60.6	61.6	61.1
STD.				0.063	0.016	20.623	24.481	21.649



Station	From	То	Length	Rut Depth Average	Rut Depth Std.Dev.	IWP IRI	OWP IRI	AVG. IRI
ft.	f		ft.	ii	٦.		ìn./mi.	
1+00	0	100	100	0.11	0.036	57	46	52
2+00	100	200	100	0.09	0.023	33	47	40
3+00	200	300	100	0.12	0.024	53	59	56
4+00	300	400	100	0.17	0.039	94	102	98
4+99	400	499	99	0.17	0.022	69	49	59
AVG.				0.132	0.029	61.2	60.6	60.9
STD.				0.036	0.008	22.454	23.713	21.961



Station	From	То	Length	Rut Depth	Rut Depth	IWP	OWP	AVG.
				Average	Std.Dev.	IRI	IRI	IRI
ft.	ft.		ft.	ir	٦.		in./mi.	***************************************
1+00	0	100	100	0.10	0.042	53	50	52
2+00	100	200	100	0.06	0.021	34	46	40
3+00	200	300	100	0.09	0.025	53	58	56
4+00	300	400	100	0.17	0.039	92	103	98
5+00	400	500	100	0.17	0.022	68	51	60
AVG.				0.120	0.030	60.2	61.5	60.8
STD.				0.048	0.010	21.632	23.465	21.731



APPENDIX H ROUNDUP

Location:

Roundup

Longitude: Lattitude: 108°31' W 46°27' N

Pavement Structure

Date:

March 2002

		Т	hickness	s, in	
Layer#	Material Type	Before	After	Average	Commets
1	ACP	4.3	4.3	4.3	
2	CTB	17.7	19.7	18.7	
3	Subgrade	- 1	-	-	Greenish-Brown Silty Clay (Very Stiff w/ Refusal at
					D=29 - Bore 1)

Materials Sampling

Date:

4/30/02

Material Type	Quantity	Comments
ACP/CTB	14 cores	2-10" & 12-6" cores. The first core 11 was broken. A new core 11 was taken.
CTB	2 bags	ACP/CTB cores
Subgrade	6 bags,1shelby	The subgrade was cohesive but too stiff to take shelby tubes. One small
		sample was acquired in a shelby tube.

SHRP REGIO	N	SHRP-LTPP FIELD MATERIAL SAMPLING	STATE CODE
STATE M	T		SHRP ASSIGNED ID
LTPP EXPER	IMENT Rounding E	AND FIELD TESTING ROUTE/HIGHWAY W/> -/4 La on V#/ (b) After Section LOG OF SHOULDER PROPE	De Direction -
SAMPLE/TES:	I: (a) Before Secti	on V#/ (b) After Section	FIFTH SET NO
	-	LOG OF SHOULDER PROBE UIPMENT USED	DCG SHEET: 08
OPERATOR	Dan M. EQ	UIPMENT USED_	SHEET NUMBER / OF /
AUGERING DA	TE 4 - 30 - 02 L	OCATION STATION: RP 171 (W. End	AUGER PROBE NUMBER
TOP OF ROCK	BASED ON:	OCATION STATION: RP 171 (W. End.) OFFSET: AN OPTIONAL LITEM AS PIPE	eet from %
NOTE: SHOUL	DER AUGER PROBE IS	AN OPTIONAL ITEM, AS DIRECT	ED BY SAR.
Scale (feet)	Depth from Surface (Feet)	Material Description	Material Code
121	1 1/8"	PMS	Code
	,	CT8 1	и .
2		Lite 2	Recovered w/smoll
· 3	7 20"		Souple
	26"		10 1/4" - 20"
3 4		Parada	4 20:
	36"	brangrowish grevelly very still	SHELPY Tube
5			24"-29"
or the land the	768		Markey I and a St base Straight of the
6	474	24"-25 "	Too hand
	/2	30"-38 " less conesive	
7	rak		
' <u> </u>		38"-42" 166	The state of the s
8		bery stiff clay	Shelly Tube
	66"	4711	Retasal = .5"
9	•	42"-54 less colesive	4347 3 .5
	· · · · · ·		
	or the state of th	brn gravelty very stiff pla	Somplo
10		1 Stines	370
		orn gravelly very stiff pla	57 30"- +2"
11		Cloy.	
	·		Sample
12-			54" - 66"
		•	
13	. 44		
		decreasing	
14	· :	graves	
1.5			
			The state of the s
16	i i		A 100
		brn very stiff plass.	
17			
		. · · · · · · · · · · · · · · · · · · ·	
18			* * * * * * * * * * * * * * * * * * *
		•	
19		a ·	
	1		
20	DRY	9:45 AM Done	
REFUSAL WITH	IN 20 FEET (Y/N):	N DEPTH TO REFU	SAL:(FEET)
CERTIFIED		VERIFIED AND APPROVED	MONTH DAY VEAD
G. Zeihe	3 141	APETETED WAN WELKOAEN	MONTH-DAY-YEAR 19
Crew Chief, C		SUPP Demanate alian	
Affiliation:		SHRP Representative	Date
	1121	Affiliation:	

:

OPERATOR DATE TOP OF ROCK F	ENT Roundup E (a) Before Section A. M EQ E04 - 10 - 02 L BASED ON:	LOG OF SHOULDER PROBE	DCG SHEET: 08
OPERATOR DATE AUGERING DATE TOP OF ROCK I NOTE: SHOULDE	1 . M EQ E 04 - 50 - 02 I	ROUTE/HIGHWAY N/p-14 Le on (b) After Section LOG OF SHOULDER PROBE	DCG SHEET: 08
OPERATOR DATE AUGERING DATE TOP OF ROCK I NOTE: SHOULDE	1 . M EQ E 04 - 50 - 02 I	LOG OF SHOULDER PROBE	DCG SHEET! OR
TOP OF ROCK INOTE: SHOULDE	3ASED ON:	STATE OF CHOOLINER PROBE	DCG SHEET · 02
TOP OF ROCK INOTE: SHOULDE	3ASED ON:	OCATION STATION PARTY	Attaum ama so
NOTE: SHOULDE	ASED ON:	AUALLUN STATTON P A 171 /-	SHEET NUMBER / OF /
NOTE: SHOULDE		OFFERDA.	AUGER PROBE NUMBER
Scale	R AUGER PROBE IS	OFFSET: £	eet from %
1		THE OTITIONAL TIEM, AS DIRECT	ED BY SAR.
{Teet}	Depth from	Material Description	Water 1
1	Surface (Feet)	E COMMON MANAGEMENT OF THE STATE OF THE STAT	Material Code
	4.5"	PHS	Code
2		CTB	2
	221	-	Sample 104-194
3	sweet .	grnstiff 5436	holy Somple
	- 364	1 430	iriy sample
44		plastic cly	24" - 30"
		Subgrade	Sampla
55			The first of the same of the best of the second property of the same and the contract of the same of t
er de de la companya		olivarn sililory tine	30"-36"
6		lory fine	send souple
7		Some gravel	
			60"-72.
8			
	~		
9	01	Olivara Still plasmic cl	-
-11-	4	to the contract the second way a real or agree year.	o.A.
10		han stiff plasme dig	
		w/san a prospecty	
		w/some fine gravel	· · · · · · · · · · · · · · · · · · ·
1.2		· 1	0. *
		1	
13			
			the state of the second second
_14			X
			٠ 💸 ٠ ٠ نفي
_15		5 Icahal	
16		Slightly moist @ 15'	
		•	Ty.,
17		*	we in the second
18			
			*
19			
20	DRY	11.39 AM V Dage	2 10
USAL WITHIN	20 FEET (Y/N):	Parts	SAL: (FEET)
TIFIED			
G. Zeihen		VERIFIED AND APPROVED	Month-Day-Year
w Chief, Cont		HRP Representative	<u></u> -19

Project No. 8021	Contr	ol No				
Project Name RESEARCH			N 1756			
Core Log. No. Cl. 3-27-0	7.2			· ·		
Driller MAYBERRY Cro	ew JOHN-Sam	Geotech La	7:61/ 047			
Date 4 30 0 2 Drill 51 mc	O Shelbys	# Pag	d GREG			
Drilling Method - Augers හු	. Casing	/Size	/p; . F) e			
Elev Water Lev	velPi	pe Installe	- /BIL//			
=======================================	.==========		=======================================			
Comments:				= =		
				I		
				-		
1	2222222222222	*********	=======================================	=		
CEMENT BASE		PSI	RATE	-		
	52	BAL		-		
BROWN SANDE		REFUSE	4			
W/ Some PEA BRAVEL		BAB				
B CLAY 5.0'	30" - 43"	BAL				
BROWN CLAY W/	42"- 66"	BAL	1			
	Driller To		·			
20.0 BOH		8	AMPLES			
	·		•			
					•	

Project No. 8021	Contr	col No			
Project Name RESEARCH A	Roi Sta	.: ROUNDU	Þ		
Core Log. No					
Driller_WAREREYCr	ew JOHN SAM	_ Geotech_u) . ris on)	_	
Date 4 30 000 Drill S: wco	Shelbys	# Bag	られた。 Samples	3 .	
Drilling Method - Augers 8	Casing	/Size	Bit FER		
Elev Water Lev					
=======================================		=======================================		:=	
Comments:					
				- ·	
O.O. ASPIALT. O.S				=	
CEMENT BASE 17"		BAL	RATE		
BROWD SILT SAWD					
W/S GRAVEL & CLAY		BA6 BA6			
40 It BROWN	30"- 36"				
SILLY SAND W/S	36" - 6	BAG	·		
CLAY 20.0	DRILLED.			·	•
50H	0				
	Maria Maria	MPLES:			
- /				¥	
	· .				
				•	

.

Location: Roundup Longitude: 108°31' W Lattitude: 46°27' N

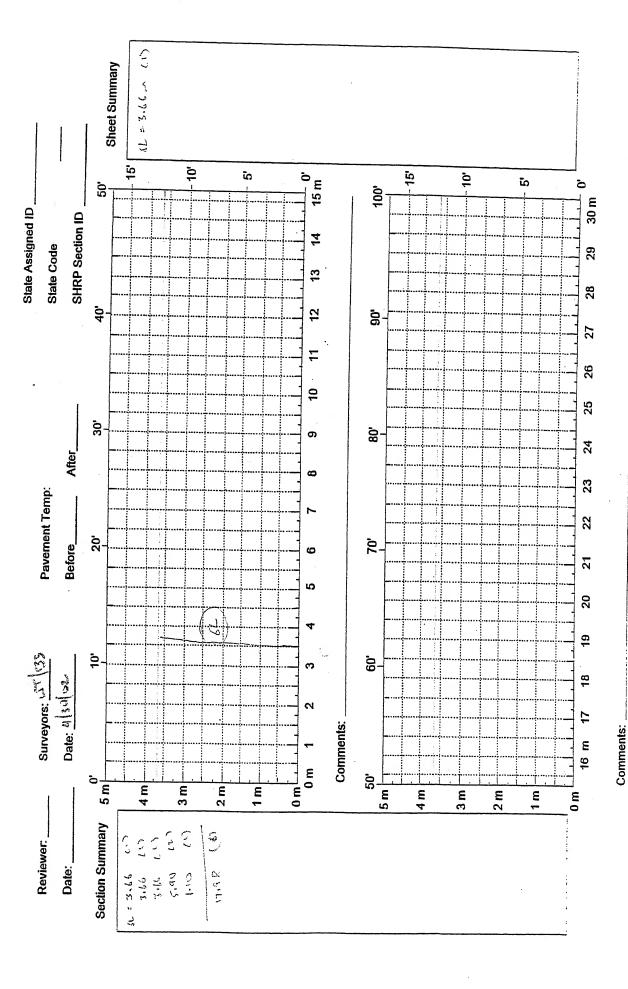
SHEET 1: DISTRESS SURVEY

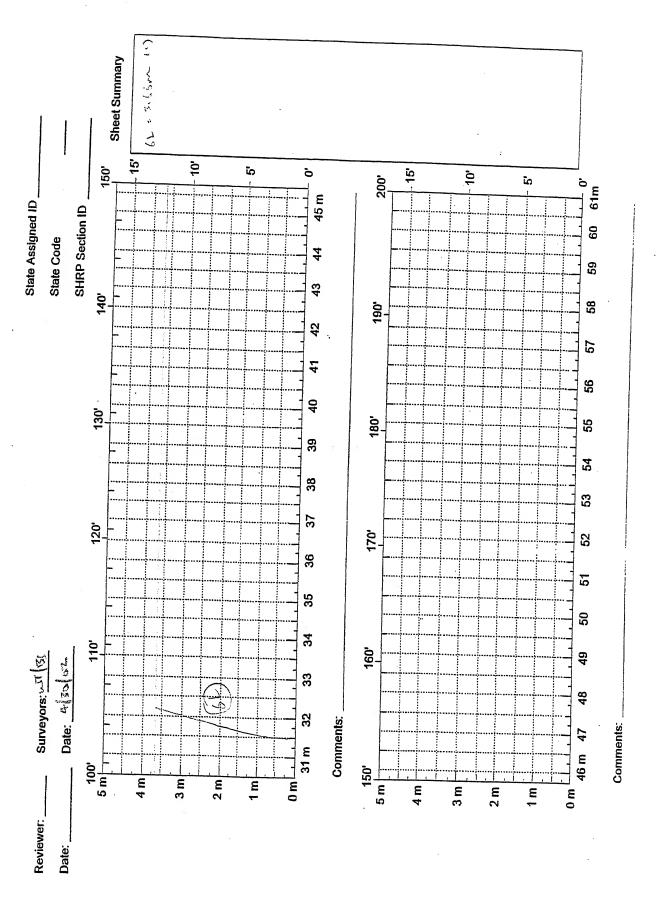
DATE OF DISTRESS SURVEY (MONTH/DAY/YEAR) SURVEYOR 1: WT SURVEYOR 2:							
		SEVERITY LEV					
DISTRESS		LOW	MODERATE	HIGH			
CRACKING	G						
1	FATIGUE CRACKING (SQUARE METERS)	0.0	0.0	0.0			
2	BLOCK CRACKING						
_	(SQUARE METERS)	0.0	0.0	0.0			
3	EDGE CRACKING (METERS)	0.0	0.0	0.0			
4	LONGITUDINAL CRACKING						
	4a. Wheelpath (Meters)	0.0	0.0	0.0			
	Length Sealed (Meters)	0.0	0.0	0.0			
	4b. Non-Wheelpath (Meters)	0.0	0.0	0.0			
	Length Sealed (Meters)	0.0	0.0	0.0			
5	REFLECTION CRACKING AT JOINTS	Not Recorded					
6	TRANSVERSE CRACKING						
	Number of Cracks	6		0			
	Length (Meters)	18.0		0.0			
	Length Sealed	0.0	0.0	0.0			
PATCHING	AND POTHOLES						
7	PATCH / PATCH DETERIORATION (Number) (Square Meters)	0.0	0.0	0.0			
8	Potholes (Number) (Square Meters)	0.0	0.0	0.0			

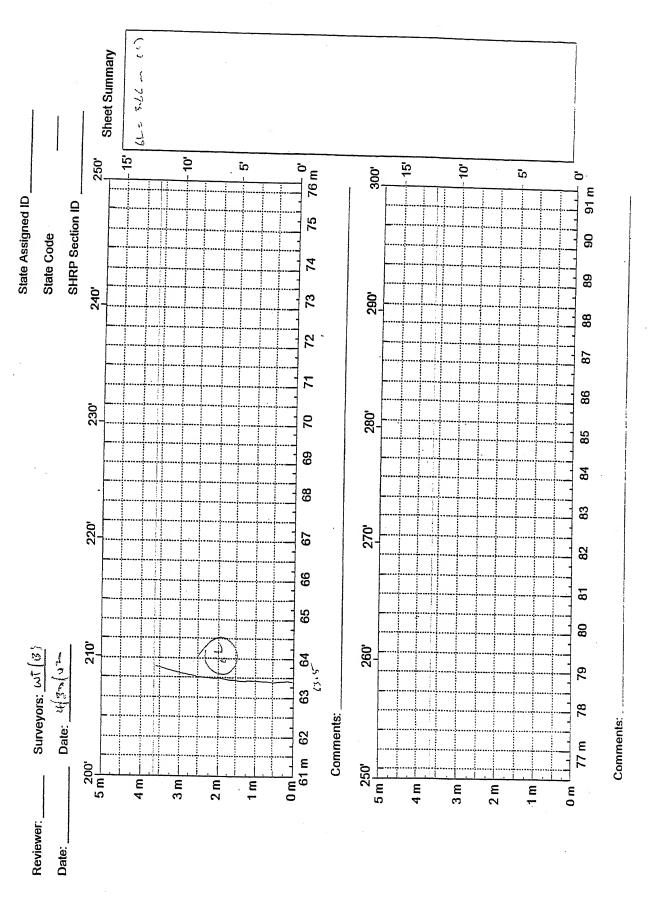
Location: Roundup
Longitude: 108°31' W
Lattitude: 46°27' N

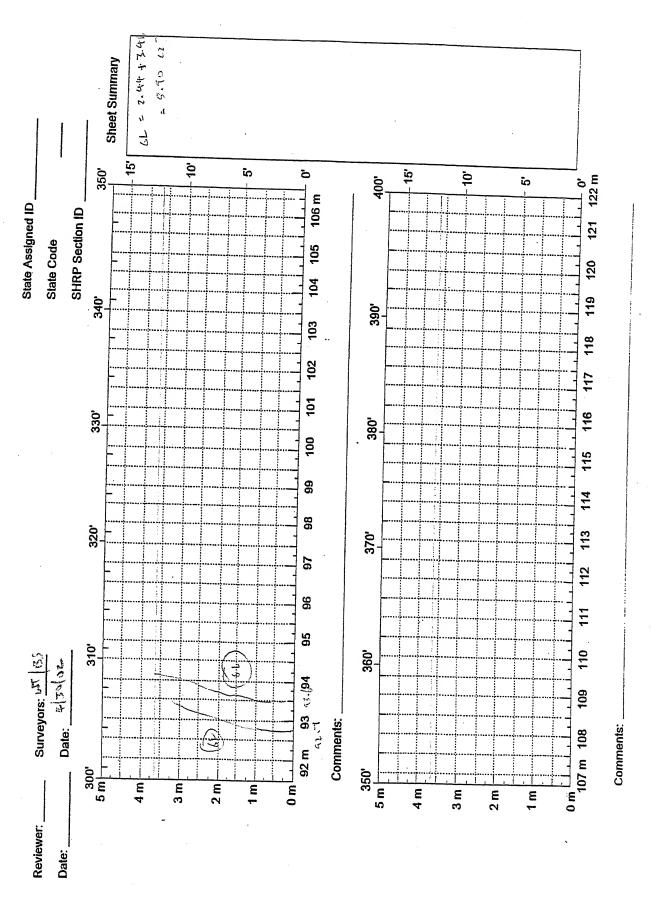
SHEET 2: DISTRESS SURVEY

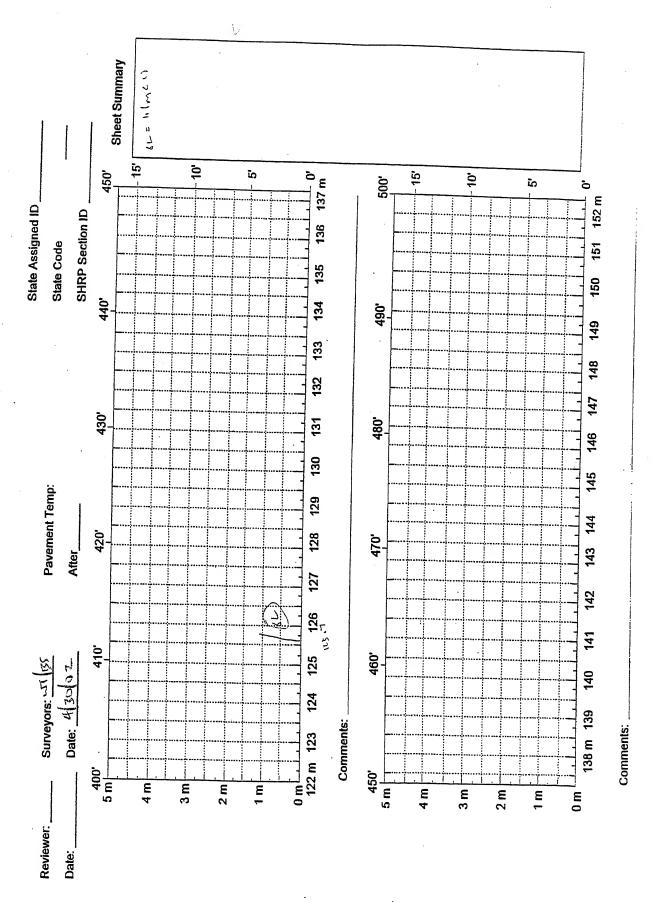
	OF DISTRESS SURVEY (MON	,	4/30/02
SURV	EYOR 1: W	T SURVEYOR 2:	BS
		SEVERITY LEVEL	
DISTR	ESS TYPE	N/A	
SURF	ACE DEFORMATION		
9	RUTTING - REFER TO P	ROFILE DATA	
10	SHOVING (Number) (Square Meters)		0.0
SURFA	ACE DEFECTS		
11	BLEEDING (Square Meters)		0.0
12	POLISHED AGGREGATE (Square Meters)	:	0.0
13	RAVELING (Square Meters)		0.0
MISCE	LLANEOUS DISTRESSES		
14	LANE-TO-SHOULDER DF	ROPOFF - Not Recorded	
15	WATER BLEEDING AND (Number) Length of Affected Paveme (Meters)		0.0
16	OTHER (Describe)		











Location: Roundup
Longitude: 108°31' W
Lattitude: 46°27' N

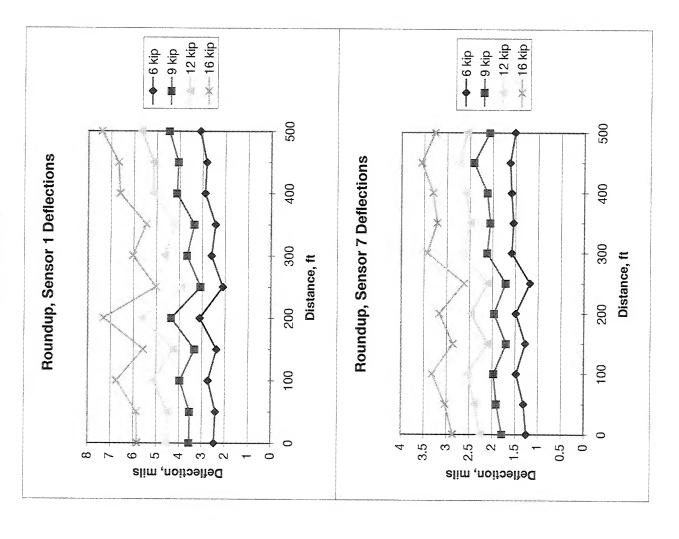
FWD Data

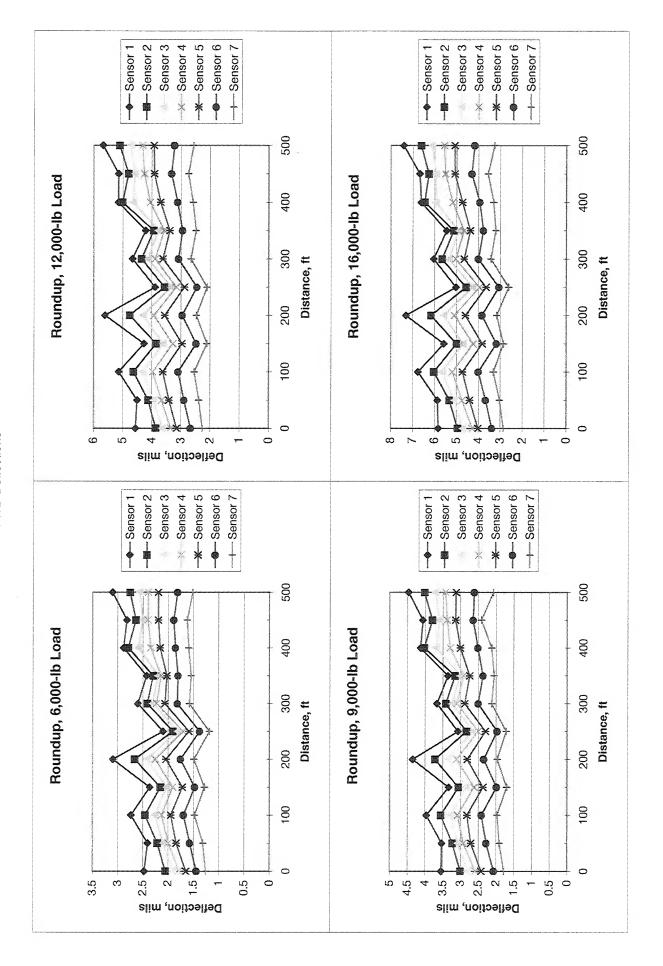
Test Date: ____10/9/01

Layer	Material	Average
	Туре	Thickness
		in.
1	ACP	4.3
2	CTB	18.7
3	Subgrade	-

Station	Load	Deflection 1	Deflection 2	Deflection 3	Deflection 4	Deflection 5	Deflection 6	Deflection 7
ft	kips	mils						
0+00	7.33	3.02	2.51	2.33	2.18	2.01	1.76	1.53
0+00	11.06	4.36	3.69	3.45	3.18	2.97	2.54	2.19
0+00	13.60	5.16	4.37	4.12	3.79	3.56	3.02	2.56
0+00	15.61	5.68	4.82	4.59	4.16	3.91	3.30	2.79
0+50	7.19	2.88	2.65	2.52	2.39	2.20	1.88	1.57
0+50	10.92	4.28	3.92	3.74	3.54	3.28	2.76	2.31
0+50	13.58	5.09	4.66	4.46	4.14	3.85	3.27	2.69
0+50	15.58	5.71	5.18	4.96	4.61	4.27	3.57	2.95
1+00	7.16	3.26	2.93	2.70	2.54	2.32	2.02	1.76
1+00	10.98	4.83	4.34	4.00	3.76	3.43	2.94	2.40
1+00	13.47	5.76	5.19	4.83	4.45	4.06	3.47	2.85
1+00	15.58	6.57	5.87	5.50	5.04	4.59	3.89	3.23
1+50	7.14	2.81	2.56	2.41	2.27	2.04	1.75	1.52
1+50	11.00	4.07	3.73	3.47	3.19	2.89	2.42	2.07
1+50	13.55	4.81	4.35	4.08	3.70	3.34	2.79	2.38
1+50	15.56	5.42	4.86	4.57	4.11	3.72	3.09	2.78
2+00	7.06	3.64	3.13	2.85	2.65	2.40	2.06	1.75
2+00	10.92	5.27	4.51	4.08	3.77	3.40	2.84	2.38
2+00	13.48	6.30	5.34	4.82	4.41	3.99	3.32	2.77
2+00	15.64	7.14	6.02	5.45	4.97	4.48	3.75	3.09
2+50	7.12	2.49	2.26	2.15	2.02	1.88	1.63	1.40
2+50	10.95	3.73	3.44	3.22	3.04	2.79	2.39	2.08
2+50	13.42	4.34	3.99	3.73	3.53	3.22	2.74	2.35
2+50	15.58	4.89	4.44	4.15	3.85	3.55	2.99	2.55

Station	Load	Deflection 1	Deflection 2	Deflection 3	Deflection 4	Deflection 5	Deflection 6	Deflection 7
ft	kips	mils						
3+00	7.07	3.06	2.84	2.72	2.62	2.43	2.14	1.86
3+00	10.92	4.44	4.14	3.93	3.76	3.49	3.03	2.57
3+00	13.44	5.22	4.87	4.62	4.35	4.05	3.45	2.97
3+00	15.58	5.88	5.51	5.20	4.90	4.52	3.89	3.34
3+50	7.03	2.84	2.69	2.58	2.51	2.37	2.11	1.81
3+50	10.85	4.04	3.80	3.63	3.51	3.30	2.85	2.47
3+50	13.41	4.70	4.40	4.23	3.99	3.78	3.29	2.77
3+50	15.57	5.30	4.99	4.77	4.53	4.25	3.67	3.13
4+00	7.06	3.39	3.28	3.05	2.76	2.54	2.18	1.87
4+00	10.80	4.95	4.82	4.43	3.95	3.60	3.01	2.54
4+00	13.38	5.74	5.58	5.17	4.52	4.12	3.47	2.88
4+00	15.53	6.41	6.26	5.77	5.01	4.58	3.82	3.21
4+50	7.03	3.30	3.09	2.93	2.81	2.57	2.21	1.90
4+50	10.80	4.87	4.55	4.31	4.05	3.76	3.17	2.89
4+50	13.31	5.70	5.32	5.08	4.72	4.34	3.68	3.04
4+50	15.37	6.41	6.02	5.70	5.29	4.87	4.13	3.42
5+00	7.06	3.65	3.24	3.02	2.82	2.58	2.13	1.78
5+00	10.87	5.39	4.85	4.48	4.13	3.77	3.15	2.50
5+00	13.38	6.33	5.69	5.27	4.81	4.38	3.59	2.86
5+00	15.47	7.16	6.39	5.91	5.37	4.91	4.03	3.16





Location:

Roundup

Longitude:

108°31' W

Lattitude:

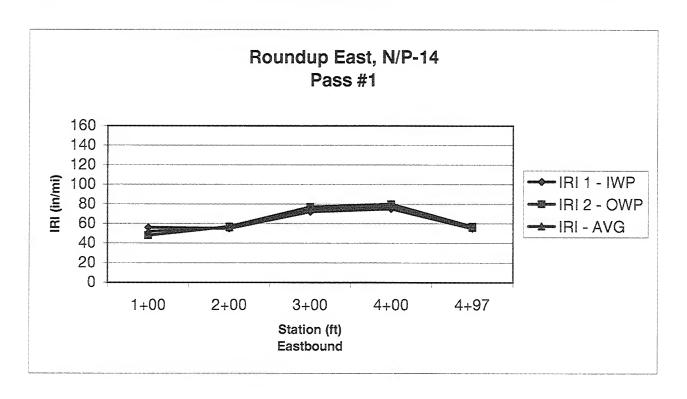
46°27' N

Profile Data

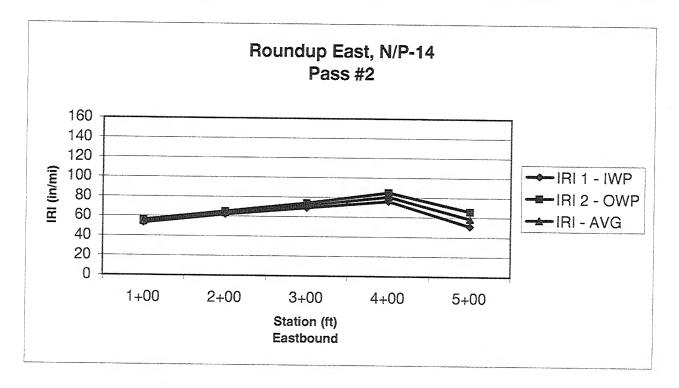
Test Date:

9/27/01

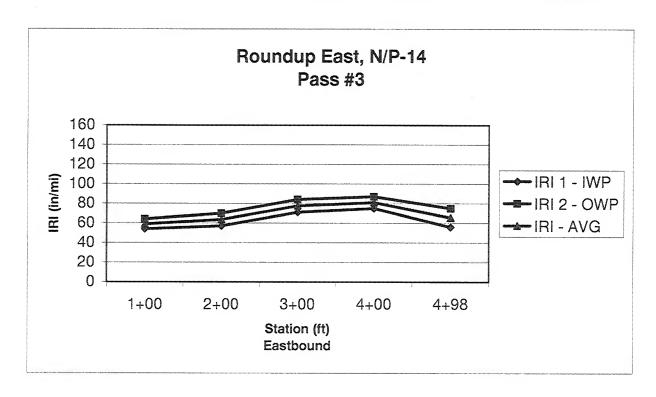
ç	·	,						
Station	From	То	Length	Rut Depth	Rut Depth	IWP	OWP	AVG.
				Average	Std.Dev.	IRI	IRI	IRI
-ft.	f	t.	ft.	ir	1.		in./mi.	
1+00	0	100	100	0.03	0.017	56	48	52
2+00	100	200	100	0.04	0.021	55	57	56
3+00	200	300	100	0.05	0.033	72	77	75
4+00	300	400	100	0.02	0.021	75	80	78
4+97	400	497	97	0.04	0.021	55	57	56
AVG.				0.036	0.023	62.6	63.8	63.2
STD.				0.011	0.006	10.015	13.953	11.846



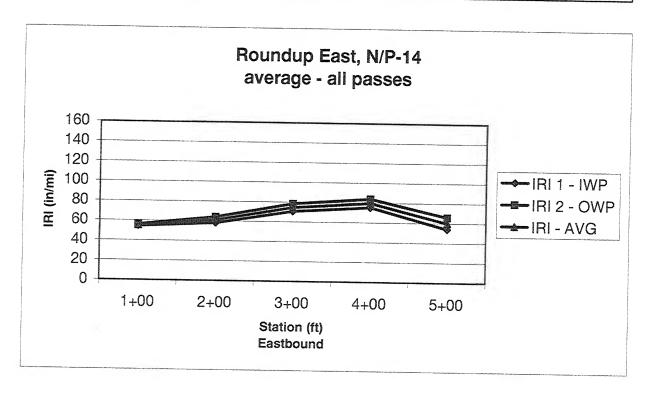
Station	From	То	Length	Rut Depth	Rut Depth	IWP	OWP	AVG.
				Average	Std.Dev.	IRI	IRI	IRI
ft.	ft.	•	ft.	ir	٦.	<u>-</u>	in./mi.	
1+00	0	100	100	0.03	0.016	53	56	55
2+00	100	200	100	0.02	0.016	62	65	64
3+00	200	300	100	0.05		69	74	72
4+00	300	400	100	0.03	0.018	76	85	81
5+00	400	500	100	0.04	0.021	51	66	59
AVG.				0.034	0.021	62.2	69.2	65.7
STD.				0.011	0.007	10.569	10.895	10.426



Station	From	То	Length	Rut Depth	Rut Depth	IWP	OWP	AVG.
				Average	Std.Dev.	IRI	IRI	IRI
ft.	ft	•	ft.	ir	1.	in./mi.		
1+00	0	100	100	0.03	0.018	54	64	59
2+00	100	200	100	0.03	0.016	57	70	64
3+00	200	300	100	0.05	0.031	71	84	78
4+00	300	400	100	0.03	0.025	75	87	81
4+98	400	498	98	0.03	0.020	56	75	66
AVG.		*		0.034	0.022	62.6	76	69.3
STD.				0.009	0.006	9.659	9.566	9.464



Station	From	То	Length	Rut Depth	Rut Depth	IWP	OWP	AVG.
				Average	Std.Dev.	IRI	IRI	IRI
ft.	ft.	*	ft.	ir	1.		in./mi.	
1+00	0	100	100	0.03	0.017	54	56	55
2+00	100	200	100	0.03	0.018	58	64	61
3+00	200	300	100	0.05	0.032	71	78	75
4+00	300	400	100	1	0.021	75	84	80
5+00	400	500	100	:	0.021	54	66	60 60
AVG.				0.035	0.022	62.5	69.7	66.1
STD.				0.009	0.006	9.882	11.324	10.457



APPENDIX I

LAVINA

Location:

Lavina

Longitude: Lattitude: 109°05' W 46°18' N

Pavement Structure

Date:

March 2002

		Th	Thickness, in		
Layer#	Material Type	Before	After	Average	Commets
1	ACP	2.6	3.0	2.8	Chip Seal
2	СТВ	16.4	14.0	15.2	
3	Subgrade	-	-	-	Olive-Brwn Silty Clay w/ Some Grvl & Very Fine Sand

Materials Sampling

Date:

5/1/02

Material Type	Quantity	Comments
ACP/CTB	14 cores	2-10" & 12-6" cores
CTB	2 bags	ACP/CTB cores
Subgrade	6 bags, 1 shelby	

SHRP REGION		_ FIELD MATE	P-LTPF ERIAL SAMPLING ELD TESTING	STATE CODE	
LIPP EXPERIM	SENT Laving W	POTTE AUTOURAN	N/O-11	SHRP ASSIC	
SATIFIE/IESI:	(a) Before Sect	TOT 1 25.7 (D)	ALLEL SECTION	た て だ て だ て だ て だ て だ て だ て だ て だ て だ て	77 73
OPERATOR DAT	en M. E	QUIPMENT USED_	OLDER PROBE	SHEET NUME	DCG SHEET: 08 SER OF
TOP OF ROCK NOTE: SHOULD	BASED ON: ER AUGER PROBE I	OFFSE S AN OPTIONAL	T: for ITEM, AS DIRECTION OF THE STREET	eet from % BY SAR	OBE NUMBERs
Scale (feet)	Depth from Surface (Feet)		l Description		Material
1	2.5"	PA	15		Code
2	9.5"	" CT	5		
	17"				
3	•	olive b	subgrade rn Silty clay		ample .5"-17"
4	18 18 18 18 18 18 18 18 18 18 18 18 18 1	5 ome	Vtike sand, g.		
	4.5		sand, g.	avel 3h	11.7 Spoon No 10 35 11 Sample
6		@47' b	aft silt w/shale	20	Blow(+ 18"
		3 taxel	fragments		
7		11 .	a clayey silt	S &	ELBY THE
8		w/go	and silver	3 9	- 47.4 (Refusel@ 12-
	er en en e ^{r e} argen en e	+		. 114	Recovered 12=
9	- 9'		bry silty wkly pla	s+	folded up ead
_10		Cly			imple × 2
11	<u>H</u> 20	brn	-/a:	1	4-35.
	11' 3.5"		slogey coorse grave		
		·			a ple
_13	•	<u></u>		5	9" - 71"
14					
	·			*	T =24, *
15	a e e e e e e e e e e e e e e e e e e e	i in the second	· · · · · · · · · · · · · · · · · · ·	1	en e
16			•		
17	,*				
•					
_18				9	
19					
20	- 0	•		-20	
	20 FEET (Y/N):_		→		
	ZU FEEL (I/N):_		DEPTH TO REFUS	AL:	(FEET)
TIFIED 6. Ze;h	cir	VERIFIED AND	APPROVED .	1	MONTH-DAY-YEAR 19
w Chief, Cor	ntractor	SHRP Represent	ative	-	Date
iliation: _/	101	Affiliation:		•	S 225 march = 108

SHRP REGION	SHRP-LTPP	STATE CODE
STATE W.T	FIELD MATERIAL SAMPLING	
LTPP EXPERIMENT / autica W/	AND FIELD TESTING ROUTE/HIGHWAY N/P- 14 Lantion (b) After Section	SHRP ASSIGNED ID
SAMPLE/TEST: (a) Refore Soci	Lat	ne Direction was
orange the sec	tion (b) After Section LOG OF SHOULDER PROBE EQUIPMENT USED	#2 FIELD SET NO.
OPERATOR A	LOG OF SHOULDER PROBE	DCG SHEET: 08
AUCEDING DAME	EQUIPMENT USED	SHEET NUMBER OF
TOP OF POOR PLOTE	LOCATION STATION: RP/39 (W. E/) OFFSET:	AUGER PROBE NUMBER
TOP OF RUCK BASED ON:	OFFSET: fe	et from %
NOTE: SHOULDER AUGER PROBE	OFFSET: fe IS AN OPTIONAL ITEM, AS DIRECTE	D BY SAR.
42		· ·
Scale Depth from (feet) Surface (Feet)	Material Description	Material
1 2-75" 1		Code
	PMS	,
9.5 " 7.25	CTB: A Recovia	
	V RECOUR	Sonple
19.0"		
3.7	5 ubarode	9"-28"
	brn' siliy plostic cly	
423	w/abund grove!	Servie XZ
	- Qual grove	
57//		20"- 32"
	draging bout interbolifed stiff	The state of the s
	Triff	
6	placticlog and gellow son	
	Some groves	5.17
7	a drove)	
	The control of the second of t	50-11e
8	orn claus.	
	orn clay-y silt	56"-68"
9	Grading to be	# · ·
	mod. Hisric cly	1 1 1 mg/
10	Fig ely	
-10 $-\mu_2 o_2$ $\overline{\nabla}$		
10'6"		
11	brn stiff plastic	
	- Stiff plastic	
1.2	Silty claq	
	1 11/49	
13	Glaver	
Pamp@13'	clayey course gravel.	s enjetiene ja kan ja
14	1 · ·	
the Texture of the Control of the Co		
		A. 1 No. 2/A.
_15		
4.75	national and a supplier of the contract of the	The state of the s
16		
27.850		
17		
		x (¥)
18		HCZT To
	1.	
_19		
20 //	*	a Hours
	Dene 11:13.	
USAL WITHIN 20 FEET (Y/N):_	N DEPTH TO REFUS	AL:(FEET)
TIFIED	VERIFIED AND APPROVED	MONTH-DAY-YEAR
G. Zeihen		19
w Chief, Contractor	SHRP Representative	Date
iliation: MDT	Affiliation:	Date
	and the state of t	
<i>P</i>		1. 9.7.4

Project No. 8021	Contro	ol No	
Project No. 8021 Project Name Research	PRO Sta.	: LAUI:	NA
Core Log. No. <u>CL-3-28-</u>	OZ Hole	No.	
Driller MAYBERRY Cre	ew John San	Geotech W	1:N60W-
Date 511 102 Drill 5: mc 0	Shelbys	# Bac	Samples CK. 6
Drilling Method - Augers 8	Casing	/Size	/Bit FGR
Elev Water Lev	vel Pi	pe Installed	
			=======================================
Comments:			
A		========	
0.0 ASPHALT. 0.3	SPT/SHELBYS	PSI	RATE
CTB - 65 -	65.18"	BAG	
LI BROWN SILLY	174. 35"	SS 2)	7000
	35" 42"	SHELBY	<u>.</u>
GRAVE L.	17"- 35"	BA6 - 2	BALLS
	6' BAG S	AMPLE	
	.^		

Project No. 802) Control No.								
Project Name RESEARCH	Proj Sta.	: LAUE	NA					
Core Log. No. CL-3.	DZ Hole	No Q						
Driller MAYBERRY Crew JOHN SAM Geotech (): N66W								
Date 4/36/02 Drill Simco Shelbys # Bag Samples								
Drilling Method - Augers &	Casing	/Size	/Bit FGR					
Elev Water Lev	el	pe Installed						
	WHILE DOWN		=======================================					
Comments:								
0.0- AspHART, O.4			=======================================					
CTA 8.6 Brown	SPT/SHELBYS	BA6	RATE					
FINE SAUDY	<i>5</i> 0, ⋅ 35,,		SAMBLES					
CHAY W/S GRAVEL		1 BAG	2 KMB CEZ					
MORE GRAVEL		<i>Q</i> 0'						
EWARDS Bottom	7	SAMPLES						
20.0	, 700	DAMPIES						
BOH -								
· .			•					
	·	į						

.

Location: Lavina
Longitude: 109°05' W
Lattitude: 46°18' N

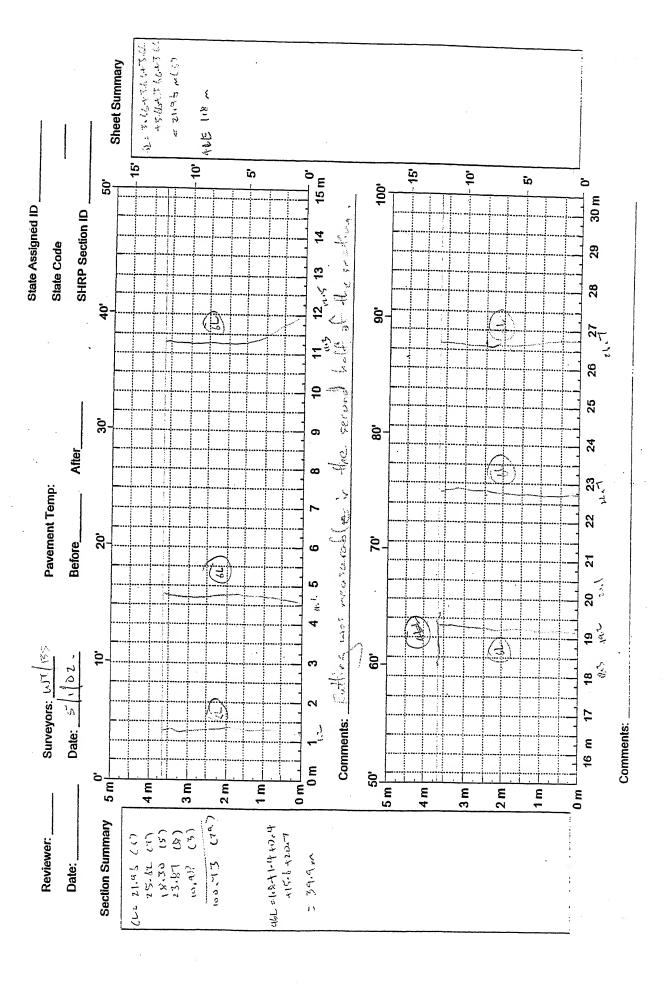
SHEET 1: DISTRESS SURVEY

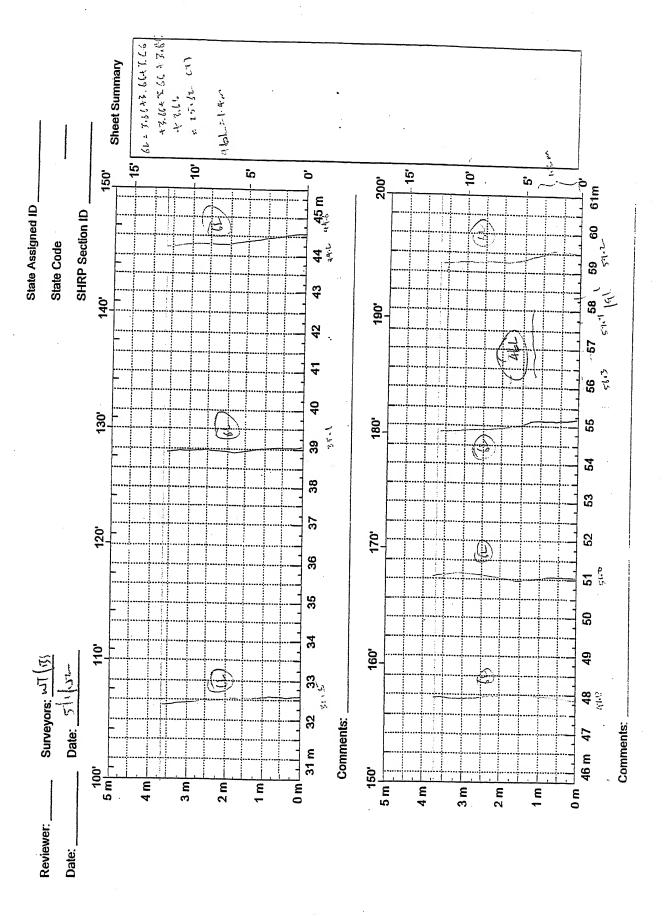
	OF DISTRESS SURVEY (MONTH/DAY/YEA EYOR 1: WT_	R) SURVEYOR 2	 2:	5/1/02 BS
		SEVERITY LEV	FI	
DISTR	ESS TYPE	LOW	MODERATE	HIGH
CRACI	KING			
1	FATIGUE CRACKING (SQUARE METERS)	0.0	0.0	0.0
	(SQUARE METERS)	0.0	0.0	0.0
2	BLOCK CRACKING			
	(SQUARE METERS)	0.0	0.0	0.0
3	EDGE CRACKING (METERS)	0.0	0.0	0.0
4	LONGITUDINAL CRACKING			
	4a. Wheelpath (Meters)	0.0	0.0	0.0
	Length Sealed (Meters)	0.0	0.0	0.0
	4b. Non-Wheelpath (Meters)	39.9	0.0	0.0
	Length Sealed (Meters)	0.0	0.0	0.0
5	REFLECTION CRACKING AT JOINTS	Not Recorded		
6	TRANSVERSE CRACKING			
	Number of Cracks	29		0
	Length (Meters)	100.7	0.0	0.0
	Length Sealed	0.0	0.0	0.0
PATCH	IING AND POTHOLES			
7	PATCH / PATCH DETERIORATION			
	(Number)	0	0	0
	(Square Meters)	0.0	0.0	0.0
8	Potholes			
	(Number)	0		0
	(Square Meters)	0.0	0.0	0.0

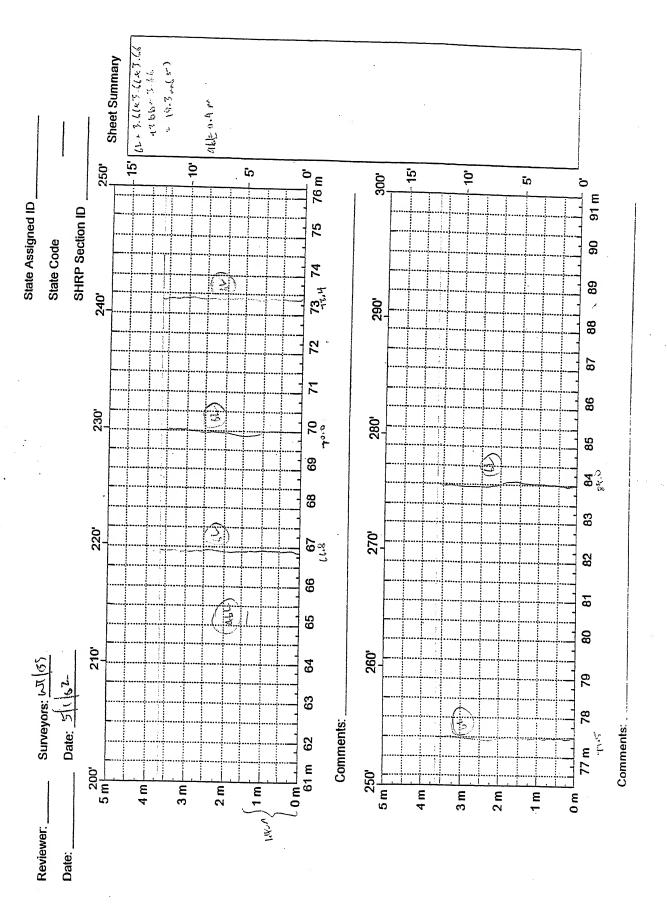
Location: Lavina
Longitude: 109°05' W
Lattitude: 46°18' N

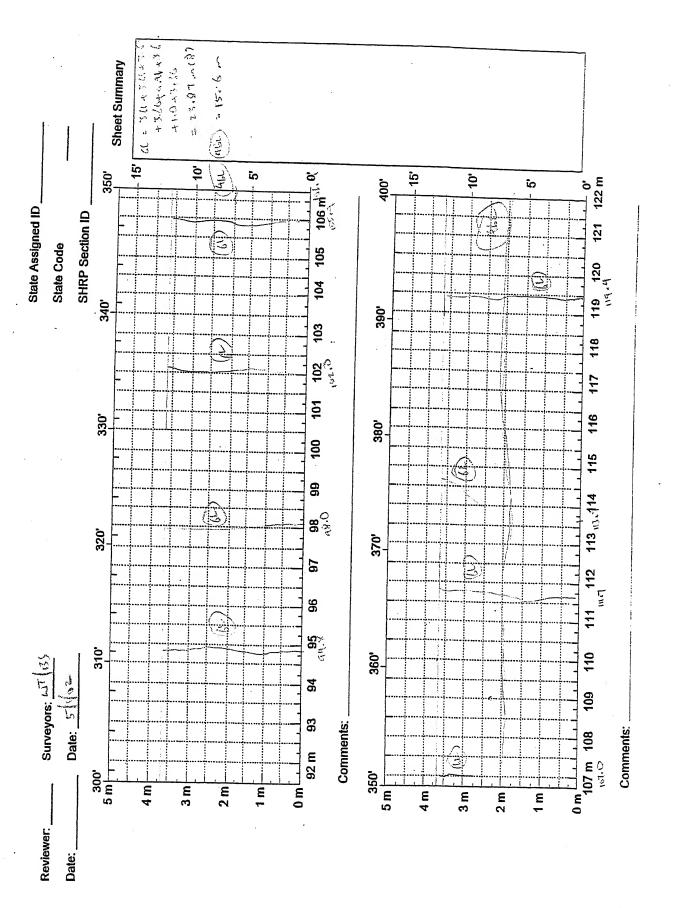
SHEET 2: DISTRESS SURVEY

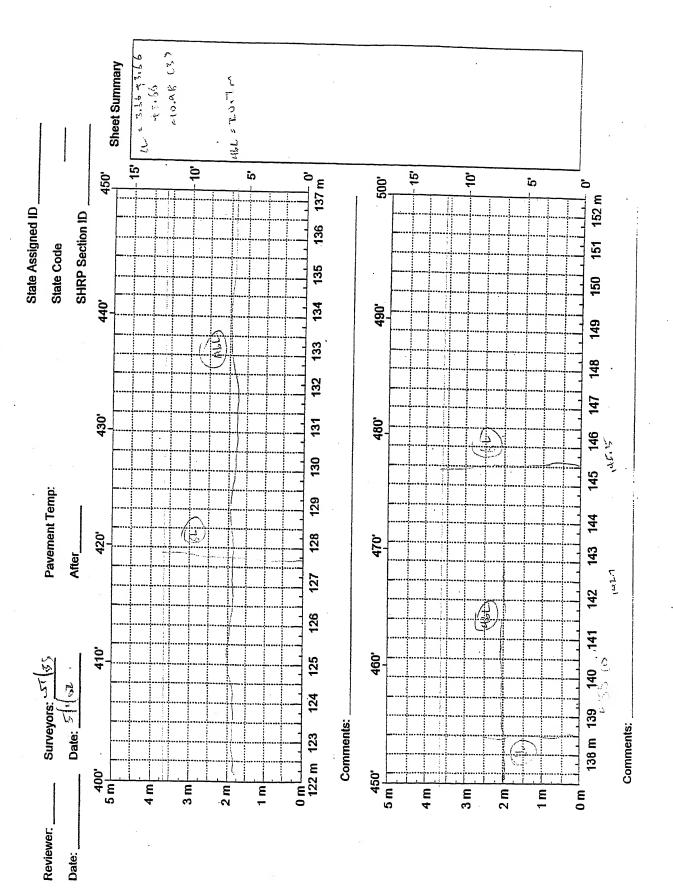
DATE OF	F DISTRESS SURVEY (MON OR 1: W		SURVEYOR 2:	5/1/02 BS
DISTRESS TYPE		S	SEVERITY LEVEL N/A	
SURFAC	E DEFORMATION			
9	RUTTING - REFER TO F	PROFILE DATA		
10	SHOVING (Number) (Square Meters)			0.0
SURFAC	E DEFECTS			
11	BLEEDING (Square Meters)			0.0
12	POLISHED AGGREGATE (Square Meters)	Ē		0.0
13	RAVELING (Square Meters)			0.0
MISCELL	ANEOUS DISTRESSES			
14	LANE-TO-SHOULDER DE	ROPOFF - Not F	Recorded	
15	WATER BLEEDING AND (Number) Length of Affected Pavem (Meters)			0.0
16	OTHER (Describe) section	Rutting was m	easurable on the secon	d half of the
		-		











Location: Lavina
Longitude: 109°05' W
Lattitude: 46°18' N

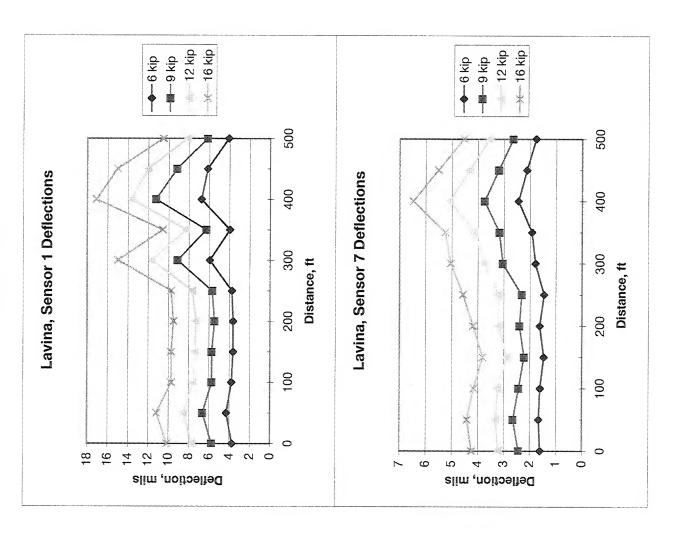
FWD Data

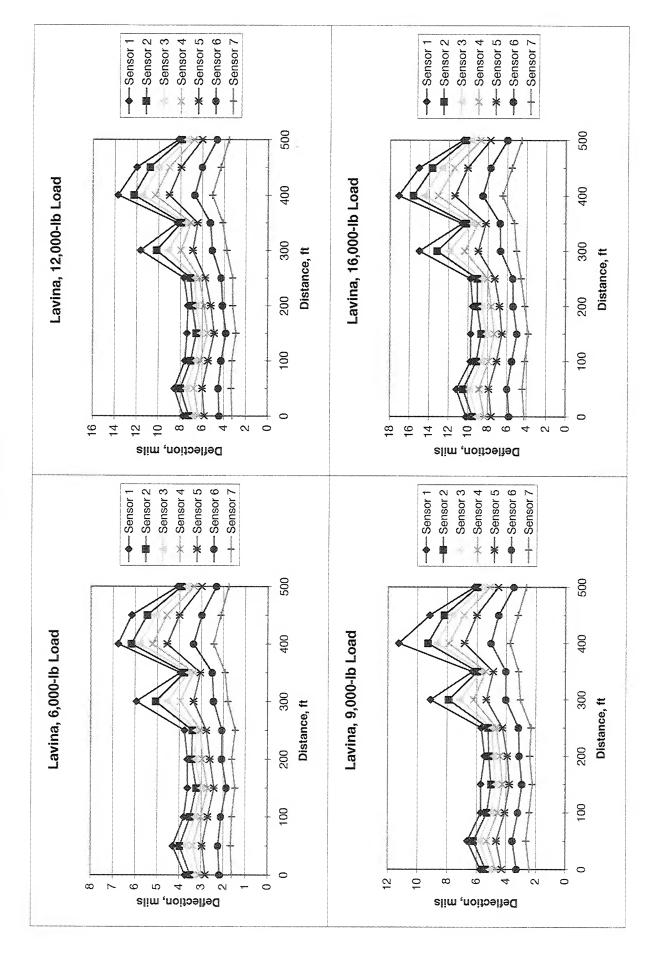
Test Date: 10/10/01

Layer	Material Type	Average Thickness
1	ACP	in. 2.8
2	CTB	15.2
3	Subgrade	-

Station	Load	Deflection 1	Deflection 2	Deflection 3	Deflection 4	Deflection 5	Deflection 6	Deflection 7
ft	kips	mils						
0+00	6.87	4.27	4.00	3.77	3.54	3.21	2.48	1.84
0+00	9.09	5.79	5.43	5.15	4.75	4.34	3.33	2.46
0+00	11.49	7.37	6.89	6.54	6.05	5.51	4.22	3.08
0+00	15.31	9.73	9.12	8.70	7.96	7.26	5.52	4.05
0+50	6.80	4.86	4.50	4.22	3.82	3.35	2.53	1.88
0+50	8.99	6.61	6.19	5.79	5.30	4.66	3.57	2.64
0+50	11.50	8.16	7.63	7.14	6.44	5.71	4.30	3.17
0+50	15.33	10.70	10.04	9.43	8.48	7.53	5.73	4.23
1+00	6.83	4.30	3.98	3.74	3.43	3.07	2.39	1.83
1+00	9.01	5.72	5.31	4.99	4.57	4.09	3.20	2.43
1+00	11.46	7.21	6.71	6.28	5.86	5.19	4.05	3.09
1+00	15.24	9.26	8.70	8.21	7.49	6.72	5.24	3.96
1+50	6.85	4.13	3.67	3.43	3.09	2.76	2.12	1.67
1+50	9.11	5.78	5.08	4.76	4.30	3.82	2.96	2.25
1+50	11.49	7.07	6.24	5.85	5.27	4.68	3.64	2.77
1+50	15.47	9.40	8.36	7.83	7.07	6.29	4.82	3.68
2+00	6.87	4.15	3.92	3.75	3.37	2.98	2.36	1.85
2+00	9.04	5.49	5.20	4.90	4.44	3.93	3.12	2.41
2+00	11.58	7.04	6.64	6.33	5.63	5.02	3.98	3.08
2+00	15.31	9.10	8.66	8.22	7.29	6.48	5.14	4.00
2+50	6.69	4.19	3.79	3.60	3.37	3.08	2.29	1.62
2+50	8.79	5.55	5.10	4.85	4.55	4.15	3.09	2.26
2+50	11.24	7.17	6.63	6.25	5.88	5.36	3.99	3.00
2+50	15.08	9.19	8.53	8.08	7.53	6.84	5.10	4.31

Station	Load	Deflection 1	Deflection 2	Deflection 3	Deflection 4	Deflection 5	Deflection 6	Deflection
ft	kips	mils	mils	mils	mils	mils	mils	mils
3+00	6.74	6.67	5.69	5.09	4.43	3.76	2.74	2.01
3+00	8.95	9.06	7.85	7.07	6.18	5.32	4.00	3.03
3+00	11.30	10.97	9.59	8.60	7.49	6.45	4.78	3.53
3+00	15.11	14.16	12.45	11.25	9.77	8.46	6.30	4.76
3+50	6.72	4.43	4.21	3.99	3.75	3.41	2.80	2.15
3+50	8.94	6.24	5.91	5.64	5.34	4.84	4.00	3.15
3+50	11.39	7.87	7.53	7.14	6.69	6.11	5.00	3.92
3+50	15.20	10.07	9.71	9.12	8.52	7.79	6.38	5.00
4+00	6.15	6.93	6.32	5.94	5.34	4.66	3.44	2.51
4+00	8.26	10.33	8.53	7.98	7.22	6.26	4.62	3.44
4+00	10.48	11.96	10.70	10.03	9.00	7.89	5.85	4.44
4+00	13.98	14.96	13.65	12.67	11.42	9.92	7.43	5.66
4+50	6.73	6.90	6.12	5.69	5.12	4.48	3.34	2.38
4+50	8.93	9.11	8.14	7.55	6.79	5.96	4.49	3.18
4+50	11.27	11.27	10.14	9.40	8.48	7.46	5.65	4.06
4+50	15.34	14.42	13.12	12.15	10.93	9.65	7.38	5.29
5+00	6.79	4.61	4.42	4.16	3.79	3.38	2.63	2.00
5+00	8.98	6.16	5.95	5.61	5.11	4.53	3.49	2.65
5+00	11.38	7.74	7.48	7.01	6.42	5.70	4.42	3.37
5+00	15.40	10.13	9.87	9.29	8.41	7.45	5.76	4.37





Location:

Lavina

Longitude:

109°05' W

Lattitude:

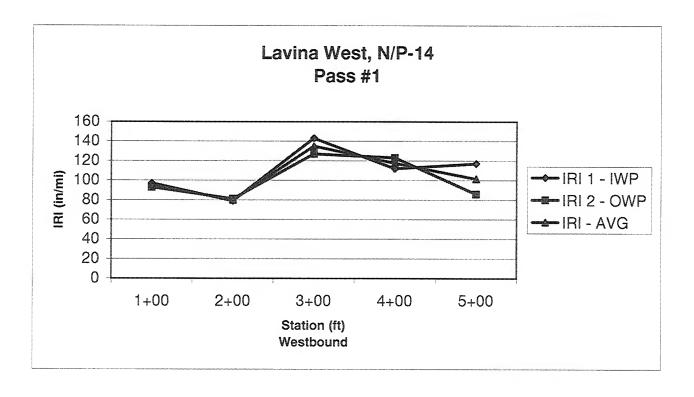
46°18' N

Profile Data

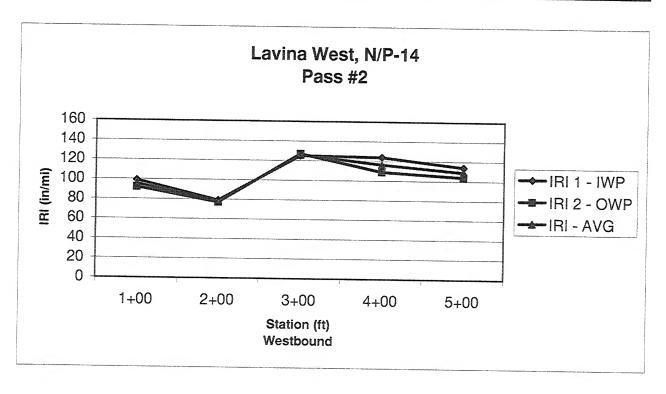
Test Date:

9/27/01

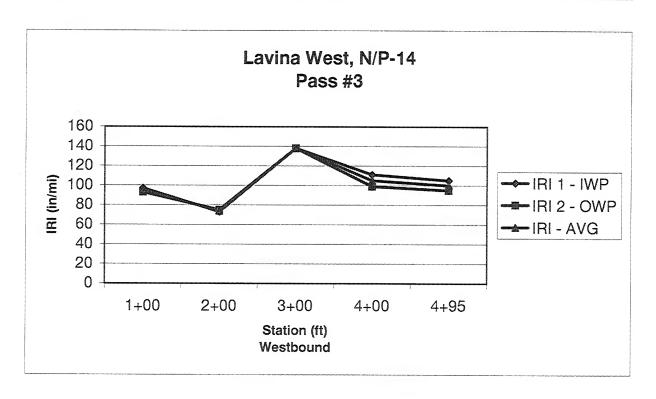
Station	From	То	Length	Rut Depth	Rut Depth	IWP	OWP	AVG.
				Average	Std.Dev.	IRI	IRI	IRI
ft.	f	t.	ft.	ir	1.		in./mi.	
1+00	0	100	100	0.17	0.046	97	93	95
2+00	100	200	100	0.15	0.049	79	81	80
3+00	200	300	100	0.11	0.062	143	127	135
4+00	300	400	100	0.14	0.106	112	123	118
5+00	400	500	100	0.27	0.072	117	86	102
AVG.				0.168	0.067	109.6	102.0	105.8
STD.	and the second			0.061	0.024	23.829	21.471	21.156



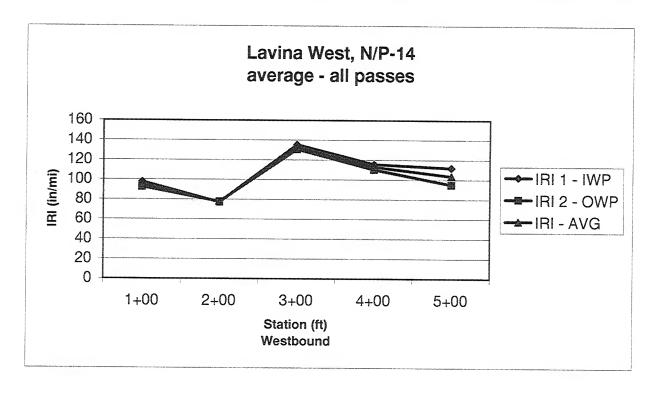
Station	From	То	Length	Rut Depth	Rut Depth	IWP	OWP	AVG.
				Average	Std.Dev.	IRI	IRI	IRI
ft.	ft.		ft.	ir	1.		in./mi.	
1+00	0	100	100	0.17	0.045	99	92	96
2+00	100	200	100	0.14	1	79	77	78
3+00	200	300	100	0.11	0.058	125	127	126
4+00	300	400	100	0.16	0.110	124	109	117
5+00	400	500	100	0.26	0.079	114	104	109
AVG.				0.168	0.070	108.2	101.8	105.0
STD.				0.056	0.026	19.383	18.727	18.765



Station	From	То	Length	Rut Depth Average	Rut Depth Std.Dev.	IWP IRI	OWP IRI	AVG. IRI
ft.	ft		ft.	ir	1.		in./mi.	
1+00	0	100	100.	0.15	0.042	97	93	95
2+00	100	200	100	0.16	0.054	73	75	74
3+00	200	300	100	0.10	0.048	138	138	138
4+00	300	400	100	0.16	0.117	111	99	105
4+95	400	495	95	0.24	0.090	105	95	100
AVG.				0.162	0.070	104.8	100.0	102.4
STD.				0.050	0.032	23.520	23.152	23.137



Station	From	То	Length	Rut Depth	Rut Depth	IWP	OWP	AVG.
				Average	Std.Dev.	IRI	IRI	IRI
ft.	ft	•	ft.	i	٦.		in./mi.	
1+00	0	100	100	0.16	0.044	98	93	95
2+00	100	200	100	0.15	0.053	77	78	77
3+00	200	300	100	0.11	0.056	135	131	133
4+00	300	400	100	0.15	0.111	116	110	113
5+00	400	500	100	0.26	0.080	112	95	104
AVG.				0.166	0.069	107.5	101.3	104.4
STD.				0.055	0.027	21.729	20.104	20.680



APPENDIX J GEYSER

Location:

Geyser

Longitude:

110°28' W 47°14' N

Lattitude:

Pavement Structure

Date:

March 2002

		7	Thicknes	s, in	
Layer#	Material Type	Before	After	Average	Commets
1	ACP	3.9	4.3	4.1	Chip Seal
2	CSB	11.6	11.2	11.4	
3	Base	24.5	26.5	25.5	Brown Clayey-Sandy Gravel
4	Subgrade	-	-	_	Dark Brown Stiff Plastic Clay w/ Some Gravel

Materials	Sampling

Date:

5/2/02

Material Type	Quantity	Comments
ACP/CSB	14 cores	2-10" & 12-6" cores
Base	2 bags	
Subgrade	6 bags	

SHRP REGION STATE	T	SHRP-LTPP SO	
LTPP EXPERI	MENT CAMERIE	AND FIELD TESTING SI ROUTE/HIGHWAY P-57 Lane ion V #/ (b) After Section	IRP ASSIGNED ID
SAMPLE/TEST	(a) Before Sect	ion $V \neq I$ (b) After Section	Direction w E
	,	TOC OF CHOIR DED BOCCION	FIELD SET NO
OPERATOR	E	QUIPMENT USEDSHOCATION STATION: RP-23(E. S.2/e)	DCG SHEET: 08
AUGERING DAT	E 5 - 2 - 02	OCATION STATION PARTICE	LET NUMBER / OF /
TOP OF ROCK	BASED ON:	OFFSET: feet AN OPTIONAL ITEM AS DIRECTED	AUGER PROBE NUMBER
OTE: SHOULD	ER AUGER PROBE IS	AN OPTIONAL ITEM, AS DIRECTED	BY SAR.
Scale	Depth from	Material Description	
(feet)	Surface (Feet)		Material
1	3.5"	Pms	Code
	7		
2	L15,511	ETB Rocovid w/co.	
		Francis C	
3	32"	orn clave	
		bra clayey coarse gravel	Spil Spesin
4		Fro dayey sand w/g.rave	87 blows
·	L40"	to days cont	101165
ongleson 5 in sangua, ilike	and the same of th	1 3 and w/grave	18"
	200 - 100 -	The state of the s	Sample
6	- 5.50	blosis C	
o	~	Massic Clu	15"-32"
		polaris cly some gravel	
7	7.0'-	Subgrade James	Sample x-2.
			407-59"
8			10 - 59"
		bun sondy gravel	
9	•	3 7 va-el	
1.	es.	dk bon stite plast Study	500
10		Stude	8412
	•	Cly w/grayal	
11	-10.5 /		1
		V CEGIST A ravel / Goulder 5	
1.2	EOH	cante drawn /	
	. m	1	
	•	REFUEL.	
_13		REFUSAL	*
_14		·	1
	·		1
15		•	
	≥• . (): ():		
16	·		
	i	•	
17	l		·
:			
18	·	·	_
			- W
19	1		
20			
70.47 *******	00 ====	<u> </u>	
SAL WITHIN	20 FEET (Y/N):	DEPTH TO REFUSAL	:(FEET)
	•	1777 TTTT 1 1 200 1 200 1 200 1	
IFIED 5. Zaiha	•	VERIFIED AND APPROVED	Month-Day-Year

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STATE MAD FIELD TESTING AND FIELD TESTING SAMPLE/TEST: (a) Before Section (b) After Section (v = Field Set No. 100 of Shoulder Probe SAMPLE/TEST: (a) Before Section (b) After Section (v = Field Set No. 100 of Shoulder Probe OPERATOR Don M. EQUITMENT USED SHEET NAMER (FOR NOTES) AGRICATING DATE - 2 - 2 - 2 LOCATION STATION: RF-23(M.Sub.) AUGER PROBE NAMER (FOR NOTE: SHOULDER AUGER PROBE IS AN OPTIONAL TIEM, AS DIRECTED BY SAR. Scale Depth from (feet) Phis Code (feet) Surface (Feet) Phis Code 2 - 26 - 27 Exist. East from 1/2 3 - 26 - 27 Exist. East from 1/2 4 - 25 - 25 - 27 Exist. East from 1/2 5 - 26 - 27 Exist. East from 1/2 5 - 26 - 27 Exist. East from 1/2 4 - 27 - 27 - 27 Exist. East from 1/2 1 - 15 - 27 - 27 Exist. East from 1/2 1 - 15 - 27 - 27 Exist. East from 1/2 1 - 15 - 27 - 27 Exist. East from 1/2 1 - 27 - 27 - 27 Exist. East from 1/2 1 - 27 - 27 - 27 Exist. East from 1/2 1 - 27 - 27 - 27 Exist. East from 1/2 2 - 28 - 28 Exist. East from 1/2 2 - 28 - 28 Exist. East from 1/2 3 - 27 - 27 Exist. East from 1/2 4 - 27 Exist. East from 1/2 5 - 27 Exist. East from 1/2 5 - 27 Exist. East from 1/2 1 - 27 Exist. East from 1/2 1 - 28 Exist. East from 1/2 2 - 28 Exist	SHRP REGION	SHRP-LTPP STA	ATE CODE
LIPP EXPERIENT CALLE E ROUTE/HIGHNY P = 57 Lane Direction w R SAMPLE/TEST: (a) Before Section (b) After Section v = FIELD SST NO. DEPRATOR Don M. EQUIPMENT USED SHEET NUMBER / OF / AUGRING Date = 2 - 32 LOCATION STATION: RF-21(M-SM.) AUGE PRODE NUMBER / OF / TOP OF ROCK RASED ON: OFFERT (R) AD DIRECTED BY SAR. Scale Depth from (Feet) Haterial Description Haterial Code (Feet) Surface (Feet) Ars Code 1 1 155		FIELD MATERIAL SAMPLING	
South Itsl. (a) Serve Section (b) After Section (c) After Section	LTPP EXPERIMENT CONSERS F	ROUTE ATCUIAN A - CO -	
OFFRATOR DON M. EQUIPMENT USED SHEET NUMBER OF JOSEPH NUMBER JOSEPH NUMB	SAMPLE/TEST: (a) Before Sec	tion (h) After Section	Direction w R
DEPARTOR DATE 5 - 2 - 32 LOCATION STATION: RP-23(W.S.M.) AUGERING DATE 5 - 2 - 32 LOCATION STATION: RP-23(W.S.M.) AUGER PROBE WINDER TOP OF FOCK BASED ON: OFFSET: Feat from %s NOTE: SHOULDER AUGER FROBE IS AN OPTIONAL ITEM, AS DIRECTED BY SAR. Scale Open from Surface (Feet) 1			#2 FIELD SET NO
TOP OF ROCK BASED ON STATION: RF-32(W.Sule) AUGER PROBE NUMBER TOP OF ROCK BASED ON OFFER: Feet from % Post Number FORTE: SHOULDER AUGER PROBE IS AN OPTIONAL ITEM, AS DIRECTED BY SAR. Scale Depth from Haterial Description Haterial Code 1	OPERATOR Don M.	CONTRIVENS MARK	
NOTE: SHOULDER AUGER FROBE IS AN OPTIONAL TIEM, AS DIRECTED BY SAR. Scale Depth from Surface (Feet) Haterial Description Haterial 1	AUGURING DAIL > - 2 - 42	LOCATION STATION, PA 22 (W.C.)	ET NUMBER / OF /
NOTE: SHOULDER AUGER FROBE IS AN OPTIONAL TIEM, AS DIRECTED BY SAR. Scale Depth from Surface (Feet) Haterial Description Haterial 1	TOP OF ROCK BASED ON:	OFFERT	UGER PROBE NUMBER
Scale (Feet)	NOTE: SHOULDER AUGER PROBE	IS AN OPTIONAL TIEW AS DIRECTED	from /s
Ceet Surface (Feet) PAS Code		B THE OTTIONAL TIEM, AS DIRECTED B	Y SAR.
Surface (Feet) Surface (Feet)	Scale Depth from	Material Deservation	
1	(feet) Surface (Feet) Description	
2 2 3 3 -25" -5" -5" -5" -5" -5" -5" -5" -5" -5" -	14.5"		Code
2		478	
3 3 3 3 3 3 3 3 3 3	2		The second of
3 3 3 3 3 3 3 3 3 3	28"	brass / Exist. Base	Sample 15 5" 2011
Second S	3	They grovel	
Subgrade Sample Sample Sample Sample Subgrade Sample	35"		Splin Same
5 bra Class gravel/gravelly elg Stations 6 6 Subgrade Subgrade 7	4	1	2 (-"
Subgreede Semple	42"		
G Subgrede Sangle Subgrede Sangle 44" - 54"	the 1.5 married a large of the second of the second	bra clyou as wall	39 Llows
Subgrade Sangle To "-900	Control of the second of the s	1 Javolly ely	
10 E OH	6	Subgrode	
B	-6		Sample
Sample S	7		44"
9 9 7			- 54"
9 9 7	8	dkbru- Ern STIFF Hack	
10 E OH		W/Some	b/e moc.
10 E OH	9	coose sand	78"-90"
EOH Coarse gravel's cobbles houlders Refusal 13 14 15 16 17 18 19 20 Pone 10:54 FUSAL WITHIN 20 FEET (Y/N): Y DEPTH TO REFUSAL: 9' (FEET) RETIFIED VERIFIED AND APPROVED MONTH-DAY-YEAR G. Zeihen - 19	9'		· Signa II. Tarasa katika
EOH Coarse gravel, cobbles houlder; Refosal 13 14 15 16 17 18 19 20 Pone 10:54 FUSAL WITHIN 20 FEET (Y/N): Y DEPTH TO REFUSAL: 9' (FEET) RTIFIED VERIFIED AND APPROVED MONTH-DAY-YEAR G. Zeihen - 19	10	I the second of	1
12		Coarse gravel cill	
12	11	É L. IA	
13		•	(((((((((((((((((((
13	12	Redusal	`
14			
14	13		
15			Lender Armania
15	14		
16 17 18 19 20 pone 10:54 FUSAL WITHIN 20 FEET (Y/N): Y DEPTH TO REFUSAL: 9' (FEET) RTIFIED VERIFIED AND APPROVED MONTH-DAY-YEAR G. Zeihen			
16 17 18 19 20 pone 10:54 FUSAL WITHIN 20 FEET (Y/N): Y DEPTH TO REFUSAL: 9' (FEET) RTIFIED C. Zeihen	15		
17 18 19 20 pone 10:54 FUSAL WITHIN 20 FEET (Y/N): Y DEPTH TO REFUSAL: 9' (FEET) RTIFIED VERIFIED AND APPROVED MONTH-DAY-YEAR G. Zeihen - 19			
17 18 19 20 pone 10:54 FUSAL WITHIN 20 FEET (Y/N): Y DEPTH TO REFUSAL: 9' (FEET) RTIFIED VERIFIED AND APPROVED MONTH-DAY-YEAR G. Zeihen - 19	16		and the state of t
18		1.	× × ×
18			* * * * * * * * * * * * * * * * * * * *
TUSAL WITHIN 20 FEET (Y/N): Y DEPTH TO REFUSAL: 9' (FEET) RTIFIED VERIFIED AND APPROVED MONTH-DAY-YEAR G. Zeihen - 19	17	1	
TUSAL WITHIN 20 FEET (Y/N): Y DEPTH TO REFUSAL: 9' (FEET) RTIFIED VERIFIED AND APPROVED MONTH-DAY-YEAR G. Zeihen - 19	17		i i
20 pone 10:54 FUSAL WITHIN 20 FEET (Y/N): Y DEPTH TO REFUSAL: 9' (FEET) RTIFIED G. Zeihen WONTH-DAY-YEAR - 19		*	1.03
TUSAL WITHIN 20 FEET (Y/N): Y DEPTH TO REFUSAL: 9' (FEET) RTIFIED VERIFIED AND APPROVED MONTH-DAY-YEAR G. Zeihen19			
FUSAL WITHIN 20 FEET (Y/N): Y DEPTH TO REFUSAL: 9' (FEET) RTIFIED G. Zeihen - 19	18	*	
FUSAL WITHIN 20 FEET (Y/N): Y DEPTH TO REFUSAL: 9' (FEET) RTIFIED G. Zeihen - 19	18	*	
TUSAL WITHIN 20 FEET (Y/N): Y DEPTH TO REFUSAL: 9' (FEET) RTIFIED VERIFIED AND APPROVED MONTH-DAY-YEAR19		*	
G. Zeihen 19			
G. Zeihen19	18	Y DEPTH TO REFUSAL:	9' (FEET)
on Chief Commission	18		(1 1111)
			MONTH-DAY-YEAR

24

36

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Project No. 8021	Contr	rol No			
Project Name RESEARCH	PROJ Sta	a.: LEYSE	R		
Core Log. No. Cl. 2. 34	0.7			•	
Driller MAYBERRY Cr	rew John Sam	ي Geotech	ine on t		
Date Six Da Drill Simco	Shelbys	# Bag	Samples		
Drilling Method - Augers 8"	Casing	_/Size	Bit Finger		•
Elev Water Le	vel p	ipe Installe	d		
Comments:					
				_	
	=======================================				
0.0 ASPHALT O.L	SPT/SHELBYS	l PSI	RATE	ı	
CTB - 15"	15" ~ 33"	55			
GRAVEL - SANDY	15 - 32"	BAG			
BROWN GRAVEL	40"- 59"	a BAGS			
BROWN	7.5 - 8.0	BAG		+	
CLAY - S.S	DIILLED TO	105		1 .	
SANDY BROWN	1 4	REFUSAL		!	
GRANKE 10.5	7			υχο	
BOH			' سـ		
				. 🔻	
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Project Name RESEARCH Proj Sta: LEYSER Core Log. No. CL-3-32-02 Hole No. Q Driller MAYAERRY Crew Tonn Sam Geotech Divis ON ORIG ORIGINAL	Project No. <u>8021</u>						
Driller MAYAERRY Crew Tohn Sam Geotech Diwig Ow GREG Date 5 2 02 Drill Simco Shelbys # Bag Samples Drilling Method - Augers 8 Casing /Size /Bit Finger Elev. Water Level Pipe Installed Comments: O.O ASPHALT O.YS SPT/SHELBYS PSI RATE CTB 1 15" - 28" Brig Samples GRADEL BROWN 30 - 45 SS 36-Cood Sandy GRADKL 42" - 44" Brig She	Project Name RESEARCH	ROj Sta	<u>6</u> EYS	SER			
Drilling Method - Augers 8 Casing /Size /Bit Finder Elev. Water Level Pipe Installed Comments: O.O ASPHALT O.YS SPT/SHELBYS PSI RATE CTB 1 IS" - 28" Brid GRANEL BROWN 3.0 - 45 SS 36.00.01 Sandy GRANEL 42" - 44" BA 6 U/S CLAY 48" - 52" Brid 10.0	Core Log. No. <u>C L-3-31-C</u>)2 Hole	No. <u>2</u>				
Drilling Method - Augers 8 Casing /Size /Bit Finder Elev. Water Level Pipe Installed Comments: O.O ASPHALT O.YS SPT/SHELBYS PSI RATE CTB 1 IS" - 28" Brid GRANEL BROWN 3.0 - 45 SS 36.00.01 Sandy GRANEL 42" - 44" BA 6 U/S CLAY 48" - 52" Brid 10.0	Driller MAYBERRY Cr	ew_Tohn SAM	_ Geotech_	Dino on	_		
Drilling Method - Augers 8" Casing /Size /Bit FINGER Elev Water Level Pipe Installed Comments: O.O ASPHALT O.45 SPT/SHELBYS PSI RATE CTB 15" - 28" Brb GRAUEL BROWN 3.0 - 45 SS 36.00000 SANDY GRAUKL 42" - 44" BA 6 U/S CLAY 42" - 52" Brb	Date 5 2 Da Drill Simco	Shelbys	# Ba	しゃでし g Samples			
Elev	Drilling Method - Augers 8"	Casing	_/Size	Bit FINGER	_		
Comments: 0.0 ASPHALT 0.45 SPT/SHELBYS PSI RATE CTB 1'. 15" - 28" Br6 GRAVEL BROWN 3.0' - 45 SS 36.000000000000000000000000000000000000							
0.0- ASPHALT 0.45 SPT/SHELBYS PSI RATE CTB 1'. 15"-28" Br6 GRAVEL BROWN 30'-45 SS 36.0000 BA 6 SANDY GRAVEL 42"- 44" BA 6 W/S CLAY 42"-52" Br6	Comments:				. .		
CTB 1' 15" - 28" Br6 GRAVEL BROWN 3.0' - 45 SS 36.000+ SANDY GRAVEL 42" - 44" BA6 W/S CLAY 42" - 52" BA6 10.0					- 1		
CTB 1' 15" - 28" Br6 GRAVEL BROWN 3.0' - 45 SS 36.000+ SANDY GRAVEL 42" - 44" BA6 W/S CLAY 42" - 52" BA6 10.0					_		
CTB 1' 15" - 28" Br6 GRAVEL BROWN 3.0' - 45 SS 36.000+ SANDY GRAVEL 42" - 44" BA6 W/S CLAY 42" - 52" BA6 10.0	************************		********				
GRAVEL BROWN 3.0'-45 SS 36.000+ SANDY GRAVEL 42"- 44" BA6 W/S CLAY 42"-52" BA6 10.0	O.O ASPIFALT 0.45	SPT/SHELBYS	PSI	l RATE	.1		
SANDY GRAVEL 42"- 44" BAG W/S CLAY 42"- 52" BAG 10.0		15" -28"	BR6				
W/S CLAY 42"-52" BAG	GRAVEL BROWN	3.0 - 4.5	SS	36 COOD+			
10.0	SANDY GRAVEL	42" - 44"	BAL				
	W/S CLAY	42" - 52"	BAG				
BOH.							
	BOH						
				_			
		_					
				•			
					-		

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Location: Geyser
Longitude: 110°28' W
Lattitude: 47°14' N

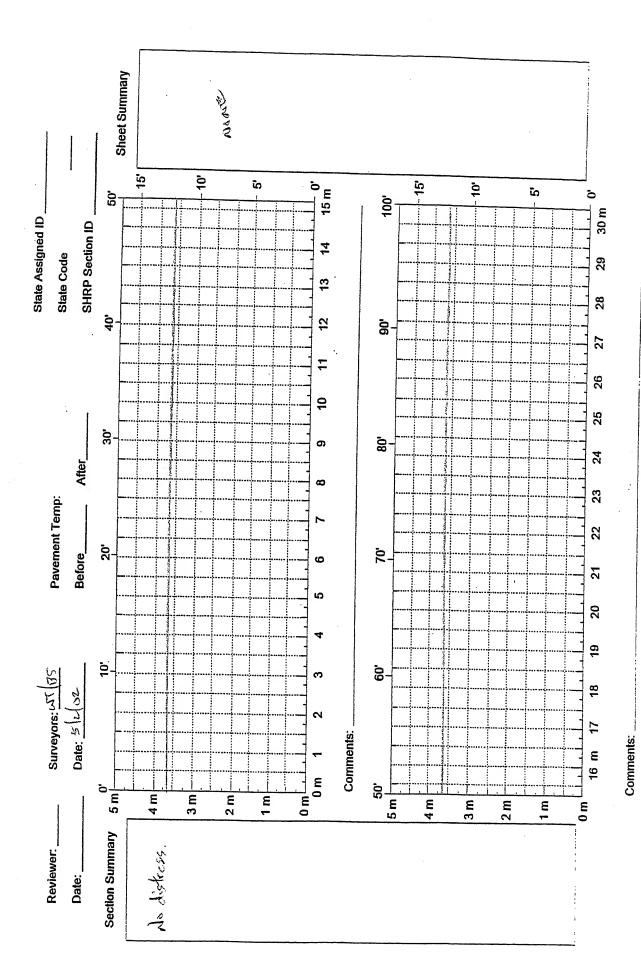
SHEET 1: DISTRESS SURVEY

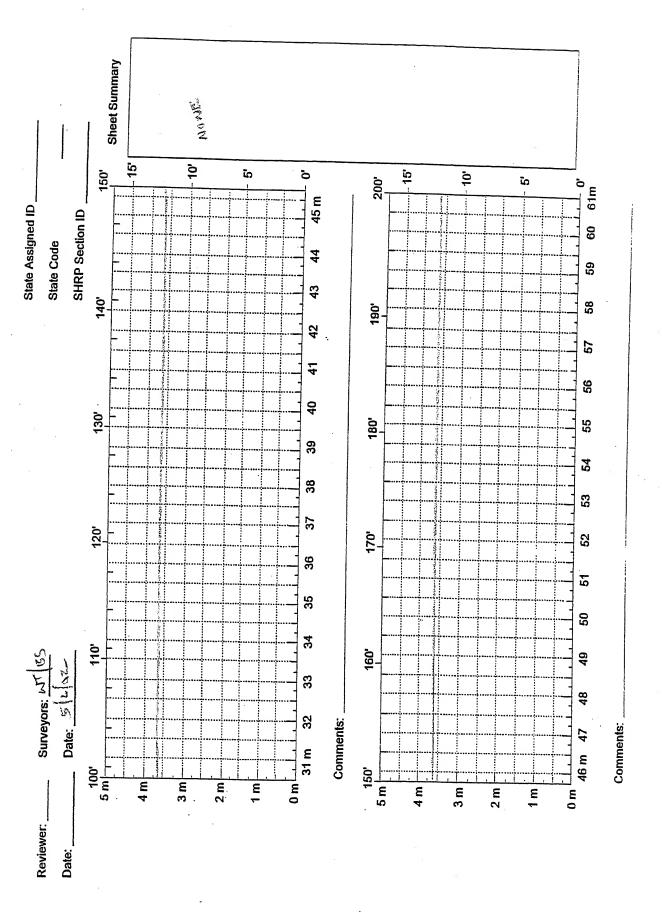
DATE OF D	DISTRESS SURVEY (MONTH/DAŸ/YEAF	R) SURVEYOR	2: 	5/2/02 BS
DISTRESS		SEVERITY LEV LOW	'EL MODERATE	HIGH
CRACKING	3			
1	FATIGUE CRACKING (SQUARE METERS)	0.0	0.0	0.0
2	BLOCK CRACKING (SQUARE METERS)	0.0	0.0	0.0
3	EDGE CRACKING (METERS)	0.0	0.0	0.0
4	LONGITUDINAL CRACKING			
	4a. Wheelpath (Meters)	0.0	0.0	0.0
	Length Sealed (Meters)	0.0	0.0	0.0
	4b. Non-Wheelpath (Meters) Length Sealed (Meters)	0.0		0.0
5	REFLECTION CRACKING AT JOINTS	Not Recorded	i	
6	TRANSVERSE CRACKING Number of Cracks Length (Meters) Length Sealed	0.0 0.0	0.0	0 0.0 0.0
PATCHING	AND POTHOLES			
7	PATCH / PATCH DETERIORATION (Number) (Square Meters)	0.0		0.0
8	Potholes (Number) (Square Meters)	0.0		0.0

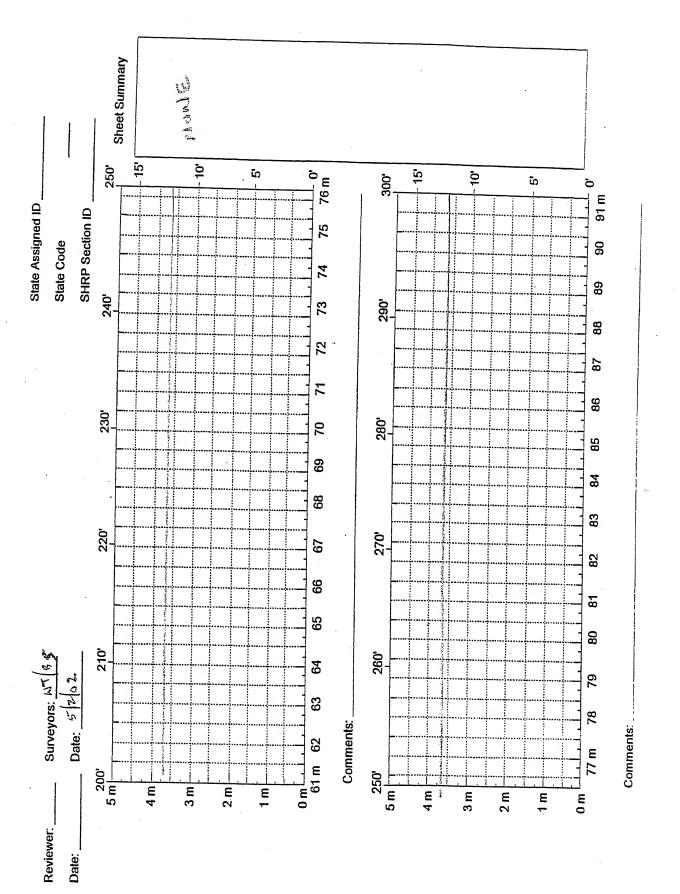
Location: Geyser
Longitude: 110°28' W
Lattitude: 47°14' N

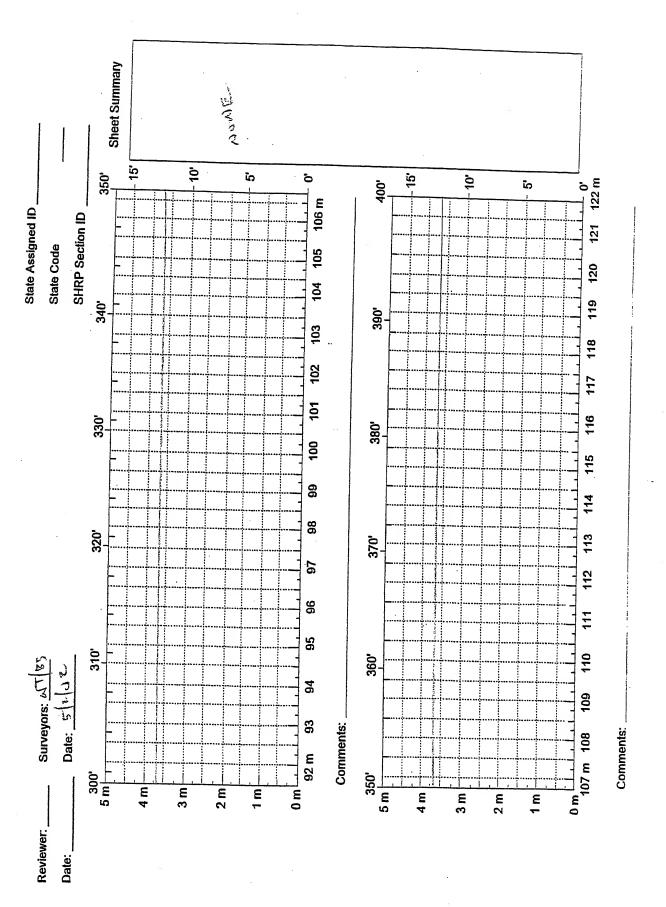
SHEET 2: DISTRESS SURVEY

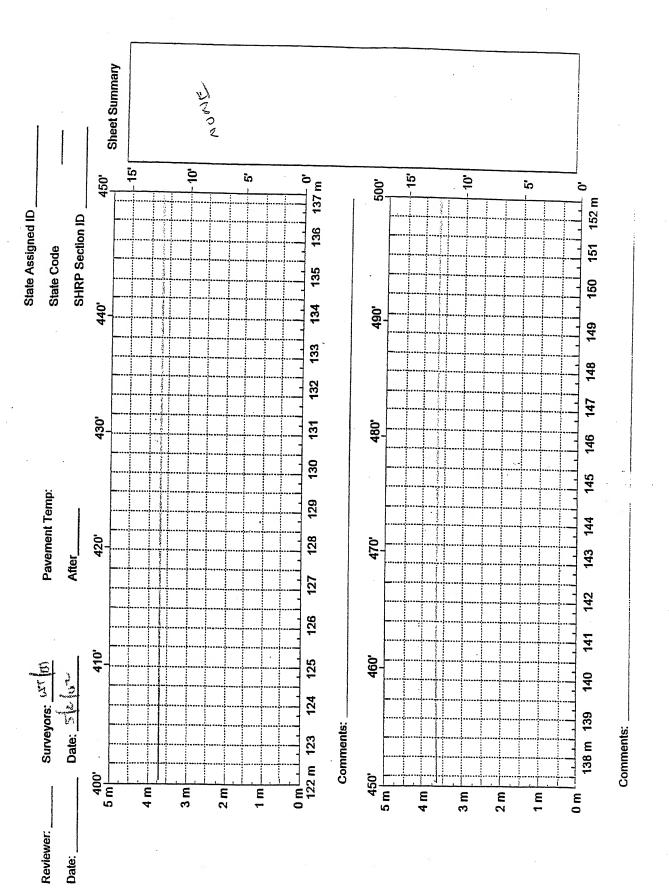
DATE OF	DATE OF DISTRESS SURVEY (MONTH/DAY/YEAR)							
SURVEY	OR 1: <u>WT</u>		SURVEYOR 2:	BS				
		S	EVERITY LEVEL					
DISTRES	S TYPE		N/A					
SURFAC	E DEFORMATION							
9	RUTTING - REFER TO PRO	OFILE DATA						
10	SHOVING (Number) (Square Meters)			0.0				
SURFAC	E DEFECTS							
11	BLEEDING (Square Meters)			0.0				
12	POLISHED AGGREGATE (Square Meters)			0.0				
13	RAVELING (Square Meters)			0.0				
MISCELL	ANEOUS DISTRESSES							
14	LANE-TO-SHOULDER DRO	POFF - Not I	Recorded					
15	WATER BLEEDING AND PI (Number) Length of Affected Pavemer (Meters)			0.0				
16	OTHER (Describe) the only distress.	No distress, cl	nip sealed on Spring 2001					











Location:

Geyser 110°28' W

Longitude: Lattitude:

47°14' N

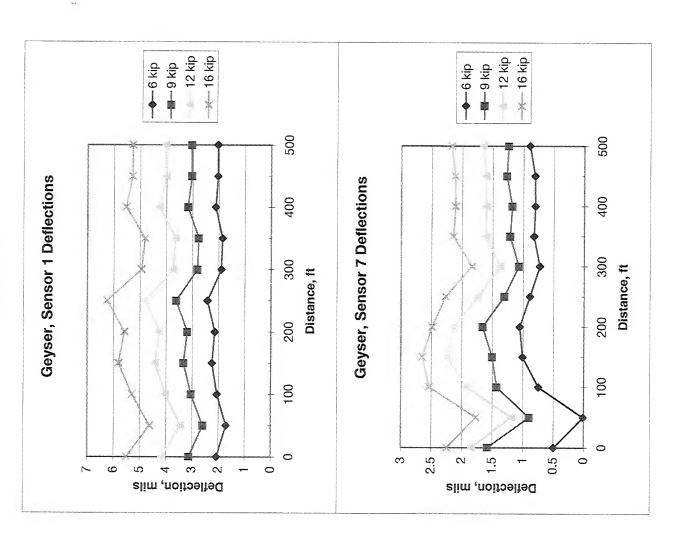
FWD Data

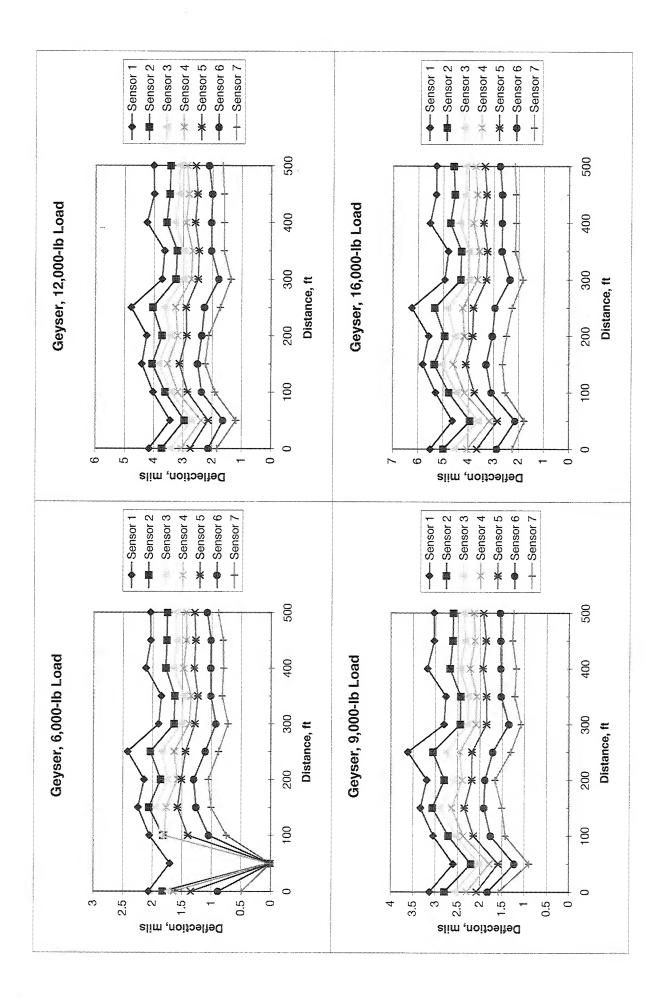
Test Date: ___10/10/01

Layer	Material	Average		
	Type	Thickness		
		in:		
1	ACP	4.1		
2	CSB	11.4		
3	Base	25.5		
4	Subgrade			

Station	Load	Deflection 1	Deflection 2	Deflection 3	Deflection 4	Deflection 5	Deflection 6	Deflection
ft	kips	mils	mils	mils	mils	mils	mils	mils
0+00	6.53	2.25	1.99	1.89	1.79	1.47	0.97	0.54
0+00	8.98	3.12	2.79	2.54	2.29	2.07	1.82	1.58
0+00	11.47	3.98	3.56	3.26	2.92	2.62	2.04	1.76
0+00	15.33	5.28	4.78	4.36	3.88	3.50	2.74	2.15
0+50	6.47	1.84	0.04	0.03	0.01	0.00	0.01	0.01
0+50	8.84	2.55	2.16	1.98	1.75	1.56	1.20	0.88
0+50	11.49	3.30	2.83	2.59	2.28	2.05	1.56	1.14
0+50	15.46	4.47	3.80	3.49	3.05	2.75	2.06	1.71
1+00	7.80	2.67	2.37	2.41	2.34	1.82	1.36	0.97
1+00	10.08	3.41	3.03	2.84	2.66	2.40	1.97	1.60
1+00	12.15	4.08	3.66	3.45	3.22	2.88	2.39	1.94
1+00	14.78	4.90	4.41	4.12	3.83	3.47	2.85	2.34
1+50	7.80	2.92	2.68	2.53	2.30	2.05	1.64	1.31
1+50	10.05	3.72	3.42	3.22	2.94	2.62	2.13	1.68
1+50	12.15	4.47	4.11	3.88	3.57	3.17	2.53	2.27
1+50	14.87	5.40	4.98	4.69	4.27	3.81	3.06	2.46
2+00	7.79	2.78	2.42	2.26	2.05	1.96	1.69	1.37
2+00	10.03	3.56	3.12	2.89	2.67	2.43	2.10	1.85
2+00	12.17	4.31	3.78	3.48	3.23	2.92	2.39	2.16
2+00	14.73	5.14	4.55	4.17	3.83	3.53	2.81	2.29
2+50	7.86	3.17	2.67	2.42	2.14	1.89	1.45	1.16
2+50	10.05	4.04	3.41	3.08	2.74	2.43	1.91	1.46
2+50	12.12	4.83	4.08	3.68	3.29	2.93	2.29	1.75
2+50	14.74	5.76	4.92	4.45	3.90	3.50	2.71	2.09

Station	Load	Deflection 1	Deflection 2	Deflection 3	Deflection 4	Deflection 5	Deflection 6	Deflection 7
ft	kips	mils						
3+00	7.77	2.46	2.12	1.96	1.79	1.66	1.20	0.94
3+00	10.07	3.14	2.73	2.54	2.34	2.07	1.51	1.20
3+00	12.17	3.78	3.30	3.03	2.76	2.53	1.81	1.39
3+00	14.73	4.55	3.97	3.66	3.36	3.03	2.17	1.69
3+50	7.86	2.43	2.13	1.93	1.77	1.62	1.33	1.08
3+50	9.99	3.07	2.70	2.51	2.30	2.06	1.69	1.35
3+50	12.15	3.69	3.25	3.02	2.72	2.49	2.06	1.63
3+50	14.78	4.44	3.96	3.67	3.30	3.01	2.47	1.98
4+00	7.85	2.77	2.33	2.15	1.93	1.70	1.33	1.05
4+00	10.04	3.55	2.98	2.73	2.48	2.16	1.71	1.32
4+00	12.07	4.27	3.59	3.30	2.92	2.61	2.05	1.61
4+00	14.78	5.11	4.36	4.01	3.52	3.15	2.46	1.95
4+50	7.86	2.67	2.31	2.08	1.87	1.67	1.33	1.06
4+50	10.03	3.38	2.91	2.60	2.36	2.08	1.71	1.42
4+50	12.08	4.03	3.49	3.16	2.83	2.53	2.02	1.62
4+50	14.75	4.88	4.19	3.79	3.37	3.03	2.45	1.95
5+00	7.79	2.65	2.28	2.08	1.86	1.68	1.40	1.16
5+00	10.04	3.39	2.90	2.63	2.39	2.15	1.73	1.39
5+00	12.11	4.06	3.47	3.16	2.90	2.60	2.14	1.67
5+00	14.80	4.89	4.25	3.80	3.45	3.11	2.55	2.01



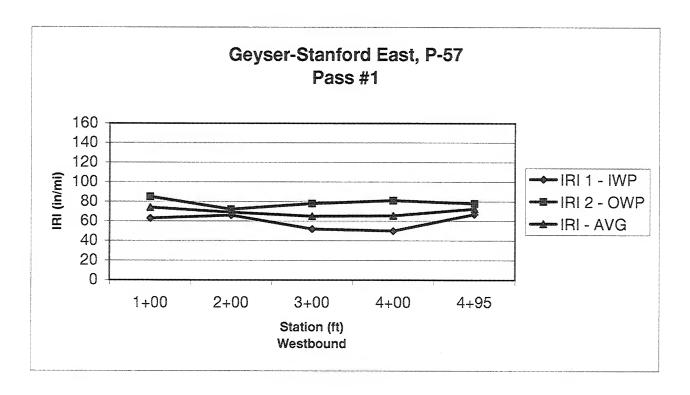


Location: Geyser Longitude: 110°28' W Lattitude: 47°14' N

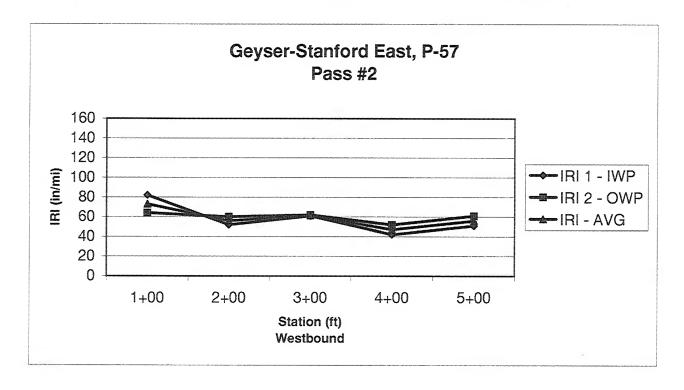
Profile Data

Test Date: 9/25/01

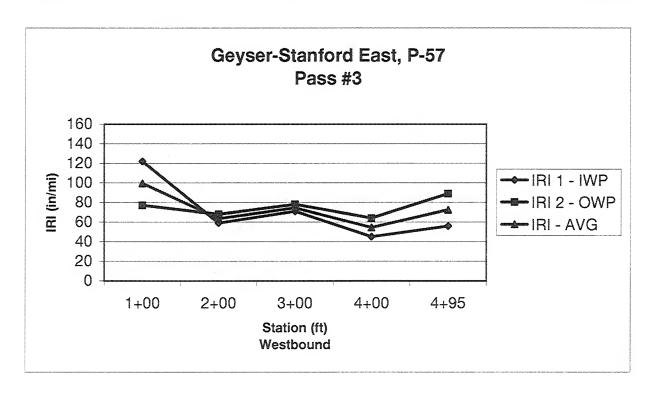
Station	From	То	Length	Rut Depth	Rut Depth	IWP	OWP	AVG.
				Average	Std.Dev.	IRI	IRI	IRI
ft.	f		ft.	ir	٦.		in./mi.	-
1+00	0	100	100	0.01	0.010	63	85	74
2+00	100	200	100	0.02	0.013	66	72	69
3+00	200	300	100	0.01	0.009	52	78	65
4+00	300	400	100	0.02	0.014	50	81	66
4+95	400	495	95	0.02	0.012	67	78	73
AVG.				0.016	0.012	59.6	78.8	69.2
STD.				0.005	0.002	8.019	4.764	4.040



,									
-	Station	From	То	Length	Rut Depth	Rut Depth	IWP	OWP	AVG.
					Average	Std.Dev.	IRI	IRI	IRI
	ft.	f	t.	ft.	ir	า.		in./mi.	
Γ	1+00	0	100	100	0.01	0.009	82	64	73
	2+00	100	200	100	0.01	0.011	52	60	56
***************************************	3+00	200	300	100	0.02	0.011	61	62	62
******	4+00	300	400	100	0.00	0.000	42	52	47
L	5+00	400	500	100	0.01	0.010	51	61	56
-	AVG.				0.010	0.008	57.6	59.8	58.7
L	STD.				0.007	0.005	15.209	4.604	9.537



Station	From	То	Length	Rut Depth	Rut Depth	IWP	OWP	AVG.
				Average	Std.Dev.	IRI	IRI	IRI
ft.	ft		ft.	ir	1.		in./mi.	
1+00	0	100	100	0.01	0.010	122	77	100
2+00	100	200	100	0.00	0.001	59	68	64
3+00	200	300	100	0.01	0.008	71	78	75
4+00	300	400	100	0.01	0.008	45	64	55
4+95	400	495	95	0.01	0.011	56	89	73
AVG.				0.008	0.008	70.6	75.2	72.9
STD.				0.004	0.004	30.188	9.731	16.861



Station	From	То	Length	Rut Depth	Rut Depth	IWP	OWP	AVG.
				Average	Std.Dev.	IRI	IRI	IRI
ft.	ft		ft.	ir	٦.		in./mi.	
1+00	0	100	100	0.01	0.010	89	75	82
2+00	100	200	100	0.01	0.008	59	67	63
3+00	200	300	100	0.01	0.009	61	73	67
4+00	300	400	100	0.01	0.007	46	66	56
5+00	400	500	100	0.01	0.011	58	76	67
AVG.			•"	0.011	0.009	62.6	71.3	66.9
STD.				0.002	0.001	15.964	4.833	9.693

